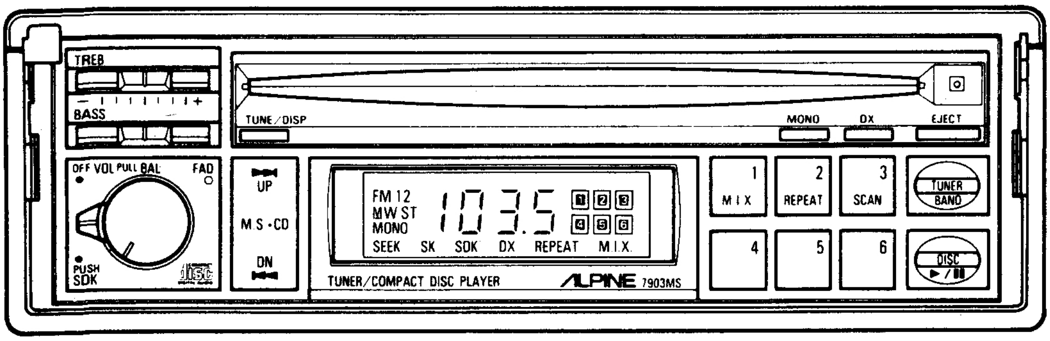
ALPINE SERVICE MANUAL

Digital FM/MW/LW
Compact Disc Player

COMPACT
disc
DIGITAL AUDIO

- For information that is not mentioned in this service manual, refer to the service manual 7903M (68P20602W02).
- For the CD player mechanism parts of this model, refer to the Service Manual · DP-S Series (Part No. 68P13315W03)


TREB
BASS
TUNE/DISP
MONO
DX
EJECT
OFF VOL PULL BAL
FAD
PUSH SDK
UP
M S·CD
DN
FM 12
MW ST
MONO
1035
SEEK SK SDK DX REPEAT MIX
TUNER/COMPACT DISC PLAYER
ALPINE 7903MS
1 MIX
2 REPEAT
3 SCAN
TUNER BAND
4
5
6
DISC ▶/II

7903MS

Contents

Specifications ········· 3 to 4
Controls and Indicators ········· 5 to 6
Features ········· 6
Operation ········· 7 to 11
Proper Care of Your Disc ········· 11 to 12
Precautions ········· 12 to 13
Disassembly Instructions ········· 14 to 15
Adjustment Procedures ········· 16 to 18
Adjustment Locations ········· 19
Description of IC Terminal ········· 20 to 22
Tuner Schematic Diagram ········· 23
Block Diagram ········· 24
Parts Layout on P. C. Boards and Wiring Diagram (1/2) ········· 25 to 27
Parts Layout on P. C. Boards and Wiring Diagram (2/2) ········· 28 to 30
Schematic Diagram (1/3) ········· 31 to 33
Schematic Diagram (2/3) ········· 34 to 36
Schematic Diagram (3/3) ········· 37 to 39
Electrical Parts List ········· 40 to 48
Cabinet Assembly Parts List ········· 49
Exploded View (Cabinet) ········· 50 to 51
Packing Assembly Parts List ········· 52
Packing Method View ········· 52
Semi conductor Lead Identifications ········· 53 to 60

Additional Schematic Diagram Inserted.

Specifications

CD SECTION

System	Optical (Compact Disc System)
Quantizing Bit Number	16 Bit Linear System
Channels	2 Channels
Distortion (1kHz)	0.08%
Frequency Response (Ref. 1kHz)	20Hz : ±3dB 100Hz~10kHz : ±2dB 20kHz : ±4dB
S/N Ratio	80dB
Separation	70dB (1kHz)
Noise Level	0.1mV
Currents (at play)	1.2A
Tone Control Effect	Bass : 100Hz ±14dB±3dB Treble : 10kHz±13dB±3dB

FM SECTION

Intermediate Frequency	107±0.1MHz
Frequency Range	87.5~108MHz
Usable Sensitivity (Stereo 30dB S/N)	17.2dBf
Limiting Sensitivity (98.1MHz)	$14.2\pm\frac{3}{5}$dBf
Signal to Noise Ratio (Stereo 98.1MHz 71.2dBf)	48dB
Image Rejection (106.1MHz)	40dB
IF Rejection (98.1MHz)	60dB
Distortion (Input 1mV.98.1MHz)	1%
Frequency Response (Ref. 400Hz)	100Hz : 0±3dB 10kHz : −12±3dB
Stereo Separation (1,000Hz)	25dB
SK Sensitivity (98.1MHz)	25.2dBf

MW SECTION

Intermediate Frequency	450±5kHz
Frequency Range	531~1,602kHz
Sensitivity (20dB S/N, 999kHz)	46.2dBf
Signal to Noise Ratio (999kHz)	44dB
Image Rejection (1,404kHz)	50dB
IF Rejection (603kHz)	60dB
Distortion (999kHz)	1%
Frequency Response (Ref. 400Hz)	100Hz : −3±4dB 4kHz : −12±6dB

LW SECTION

Intermediate Frequency	450±5kHz
Frequency Range	153~281kHz
Sensitivity (20dB S/N, 218kHz)	52.2dBf
Signal to Noise Ratio (218kHz)	40dB
Image Rejection (272kHz)	40dB
IF Rejection (218kHz)	50dB
Distortion (218kHz)	2%
Frequency Response (Ref. 400Hz)	100Hz : −3±3dB 4kHz : −12±6dB

GENERAL

Power Supply	14V DC
Output Voltage／Impedance	1.2V／10k ohm
Semiconductors	34 IC'S, 74 Transistors, 29 Diodes, 15 Zener Diodes
Dimensions	Nose : 178 (W) × 50 (H) × 15 (D) mm
	Chassis : 178 (W) × 50 (H) × 155 (D) mm
Weight	1.7kg

COMPACT DISC (Common)

Track Pitch	1.6 μm
Modulation Frequency	44.1kHz
Transfer Rate	4.3218Mbit／sec
Dimensions	120 × 1.2mm

NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

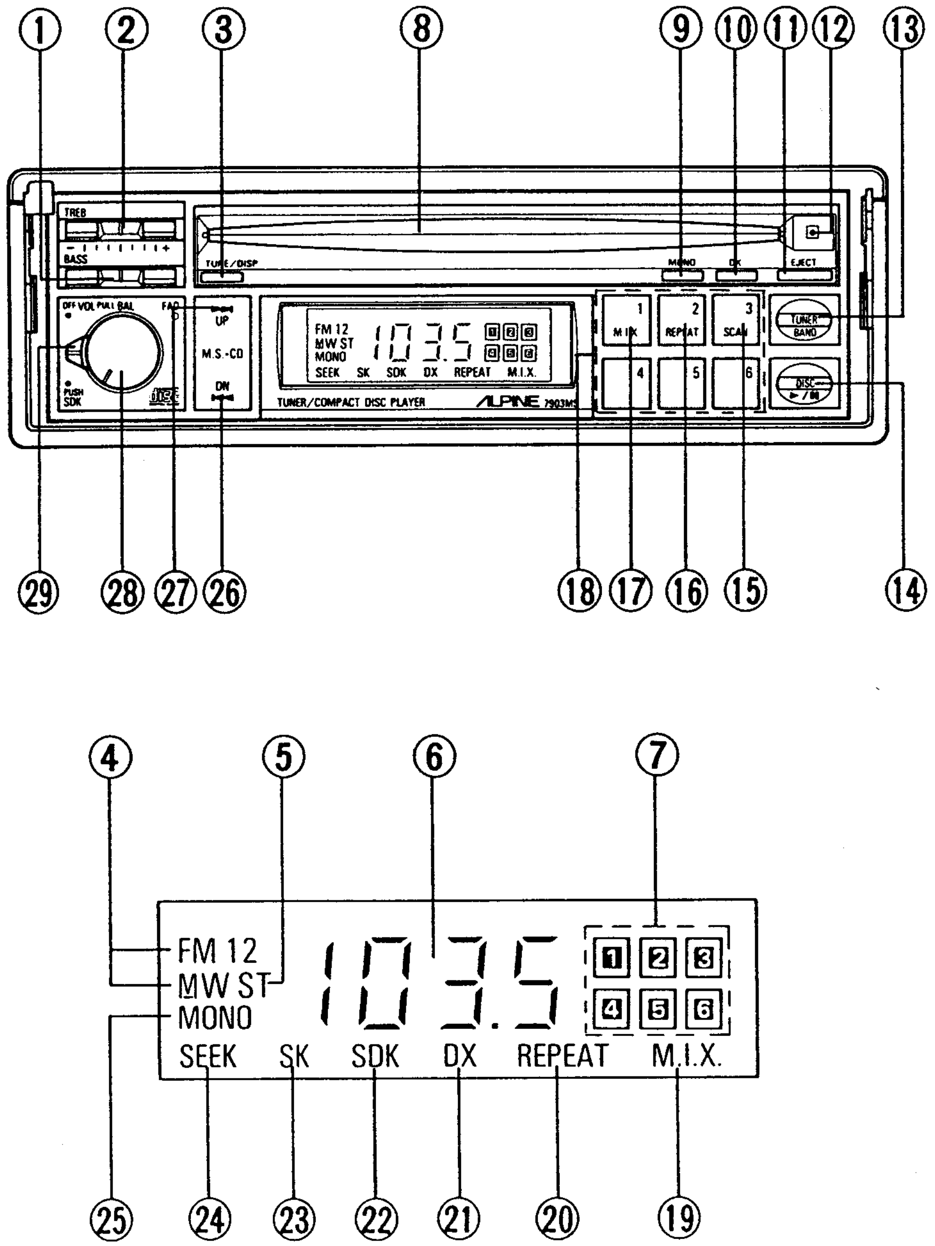


Fig. 1/Abb. 1

CONTROLS AND INDICATORS

Refer to Fig. 1 on page 3.

① **BASS Control**
② **TREBle Control**
③ **TUNE/DISP Switch**
④ **BAND Indicators**
⑤ **FM STereo Reception Indicator**

⑥ **Digital Display**
⑦ **Preset Address Indicators**
⑧ **Disc Slot**
⑨ **MONO Switch**
⑩ **DX (Local/Distance) Switch**

⑪ **EJECT Button**
⑫ **Reset Switch**
⑬ **TUNER/BAND Button**
⑭ **DISC (Play/Pause) Button (▶/❚❚)**
⑮ **SCAN Button**

⑯ **REPEAT Button**
⑰ **M.I.X. Button**
⑱ **Station Preset Buttons**
⑲ **M.I.X. Indicator**
⑳ **REPEAT Indicator**

㉑ **DX (Distance) Indicator**
㉒ **SDK Indicator**
㉓ **SK Indicator**
㉔ **SEEK Tuning Indicator**
㉕ **MONO Indicator**

㉖ **M.S. · CD DownN (⏮) Switch**
㉗ **M.S. · CD UP (⏭) Switch**
㉘ **Power Switch/VOLume Control/BALance Control (PULL)/SDK Switch (PUSH)**
㉙ **FADer Control**

FEATURES

- **FULL FRONT DIN™**
- **QUICK RELEASE BRACKET (Q.R.B.)**
  Alpine's exclusive Q.R.B. design allows for easy removal and insertion of the while still maintaining the unit's memory. The 7903MS can be removed and with the owner for theft prevention. This Q.R.B. bracket is compatible with a Amp Alpine Q.R.B. units that have RCA Connectors.

‹COMPACT DISC PLAYER FEATURES›

- **8-TIMES OVERSAMPLING DIGITAL FILTER**
- **POWER LOADING/SELF LOADING**
  Gently pulls the partially inserted compact disc into the play position and begi playback.
- **MUSIC SENSOR UP/DOWN**
  For locating the beginning of the next track (up), or the track currently in playt (down).
- **FAST FORWARD/FAST BACKWARD**
- **M.I.X.**
  When the M.I.X. button is pressed, the microprocessor inside the 7903MS w randomly select tracks for playback. After all tracks have been played, the M feature will go into Repeat mode and begin again.
- **REPEAT**
- **3-INCH DISCS**
  This unit plays 3-inch compact discs without using an adaptor ring.
- **EJECT AUTO-LOCK**
  This locks the laser mechanism when a disc is ejected.
- **DISC SCAN**
  Locates the beginning of each track and plays the first 10 seconds.
- **ELECTRONIC EJECT/RELOAD**
- **PAUSE**

‹RADIO FEATURES›

- **T-10 II TUNER**
  Alpine's premier tuner — utilizes a number of innovations to ensure stable, n FM reception in both strong and weak signal areas.
- **ETR/PLL DIGITAL FREQUENCY SYNTHESIZER**
- **DUAL PRE AMP OUTPUTS**
  This allows you to easily expand your system by providing Front and Rear Pr Outputs and a Pre-Amp Fader.
- **LITETOUCH™ 24-STATION PRESETS**
  FM1: 6, FM2: 6, MW: 6, LW: 6
- **36 DETENT VOLUME CONTROL**
- **SEPARATE BASS & TREBLE CONTROL**
- **MEMORY LOGIC ELECTRONICS**
- **POWER ANTENNA LEAD**
- **AUTO TUNE SELECT SWITCH**
- **BALANCE CONTR**
- **STEREO INDICAT**
- **PRESET ADDRES**
- **AUTO UP/DOWN**
- **STEREO/MONO S**
- **LOCAL/DX (SEEK**
- **DIGITAL DISPLAY**

CONTROLS AND INDICATORS

1 on page 3.

ontrol
Control
)ISP Switch
ndicators
reo Reception Indicator

Display
Address Indicators
)t
Switch
:al/Distance) Switch

Button
witch
/BAND Button
lay/Pause) Button (▶/❚❚)
Button

Button
Button
Preset Buttons
ndicator
Indicator

tance) Indicator
dicator
cator
uning Indicator
Indicator

:D DowN (⏮) Switch
:D UP (⏭) Switch
Switch/VOLume Control/BALance Control (PULL)/SDK Switch (PUSH)
Control

FEATURES

- **FULL FRONT DIN™**
- **QUICK RELEASE BRACKET (Q.R.B.)**
  Alpine's exclusive Q.R.B. design allows for easy removal and insertion of the 7903MS while still maintaining the unit's memory. The 7903MS can be removed and taken with the owner for theft prevention. This Q.R.B. bracket is compatible with all Pre-Amp Alpine Q.R.B. units that have RCA Connectors.

‹COMPACT DISC PLAYER FEATURES›

- **8-TIMES OVERSAMPLING DIGITAL FILTER**
- **POWER LOADING/SELF LOADING**
  Gently pulls the partially inserted compact disc into the play position and begins playback.
- **MUSIC SENSOR UP/DOWN**
  For locating the beginning of the next track (up), or the track currently in playback (down).
- **FAST FORWARD/FAST BACKWARD**
- **M.I.X.**
  When the M.I.X. button is pressed, the microprocessor inside the 7903MS will randomly select tracks for playback. After all tracks have been played, the M.I.X. feature will go into Repeat mode and begin again.
- **REPEAT**
- **3-INCH DISCS**
  This unit plays 3-inch compact discs without using an adaptor ring.
- **EJECT AUTO-LOCK**
  This locks the laser mechanism when a disc is ejected.
- **DISC SCAN**
  Locates the beginning of each track and plays the first 10 seconds.
- **ELECTRONIC EJECT/RELOAD**
- **PAUSE**

‹RADIO FEATURES›

- **T-10 II TUNER**
  Alpine's premier tuner — utilizes a number of innovations to ensure stable, noise-free FM reception in both strong and weak signal areas.
- **ETR/PLL DIGITAL FREQUENCY SYNTHESIZER**
- **DUAL PRE AMP OUTPUTS**
  This allows you to easily expand your system by providing Front and Rear Preamp Outputs and a Pre-Amp Fader.
- **LITETOUCH™ 24-STATION PRESETS**
  FM1: 6, FM2: 6, MW: 6, LW: 6
- **36 DETENT VOLUME CONTROL**
- **SEPARATE BASS & TREBLE CONTROL**
- **MEMORY LOGIC ELECTRONICS**
- **POWER ANTENNA LEAD**
- **AUTO TUNE SELECT SWITCH**
- **BALANCE CONTROL**
- **STEREO INDICATOR**
- **PRESET ADDRESS**
- **AUTO UP/DOWN SEEK**
- **STEREO/MONO SWITCH**
- **LOCAL/DX (SEEK SENSE)**
- **DIGITAL DISPLAY**

OPERATION

● BASIC OPERATION

Initial System Set-up

When operating for the very first time after installation or replacement of the car battery, press the Reset switch ⑫ with a sharp pencil or other pointed object.

Power Switching and Volume Control

Rotating the Power switch ㉘ clockwise turns power ON and continuously increases the volume. Rotating the control counterclockwise will continuously decrease the volume, and turn the Power OFF.

NOTE:

The noise level on compact discs is much lower than on analog-type records or tapes; therefore, when inserting a disc, keep the volume control turned fully counterclockwise, then adjust volume by gradually turning the control clockwise once playback begins.
Do not turn clockwise abruptly as the excessive power could damage the speakers.

Balance Control

Pull on the Volume control ㉘ and rotate to balance between left and right speakers.

Fader Control

Rotate the Fader control ㉙ for your desired front to rear volume balance.

Separate Bass and Treble Controls (①, ②)

Slide these controls to the right to increase, and to the left to decrease the level of Bass or Treble.

Function Switching

1. Tuner Mode
   With no disc loaded, the unit is normally in the tuner mode. Press the TUNER button ⑬ to switch from CD to Radio.

2. CD Mode
   When a disc is loaded, the unit automatically goes into the CD mode. Press the DISC (▶/❚❚) button ⑭ to switch from Radio to CD.

Cautions During CD Playback

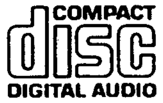
Playing a disc while driving on a very bumpy road may result in skips, but this will not scratch the disc or damage the player.

NOTES:

1. Your player accepts only one disc at a time for playback. Do not attempt to load more than one disc.
2. Make sure the label side is facing up when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset switch ⑫ with a pointed object such as a sharp pencil.

OPERATION

3. You can play 3-inch CDs in this player without using an adaptor ring.
4. Make sure your discs are labeled as shown below:



● RADIO OPERATION

If the unit is not in the Radio mode, press the TUNER/BAND button ⑬.

Tuning Band Selection

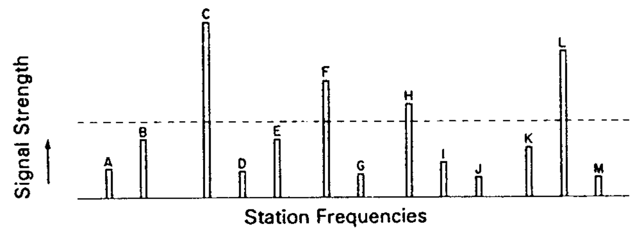
Press the BAND button ⑬ to select the desired tuning band. The Band indicator ④ shows your selection.

Local/Distance (DX) Seek Sensitivity for FM, MW and LW

You can select the radio seek sensitivity, local or distance (DX), by pressing the DX (distance) switch ⑩.

In the local mode, with no DX indication ㉑, the radio tunes in only strong stations (C, F, H and L in the illustration).

In the distance mode, with DX indication ㉑, the radio tunes in both strong and weak stations (from A to M in the illustration).



FM Stereo/Monaural Switching

You can select between the Auto Switching or Monaural only for FM reception by pressing the MONO switch ⑨. In the Auto Switching mode, you can receive stereo broadcasts in stereo and monaural broadcasts in MONO. The STereo or MONO indicator ㉕ shows you which one is being received. In the monaural mode, you will receive the broadcast in monaural only, even if the broadcast is in stereo. The monaural only mode quiets the noisy stereo signal of weaker broadcasts. The STereo indicator will not appear while the monaural mode is selected.

OPERATION

Manual Tuning

1. For Manual Tuning, press the TUNE switch ③ until its illumination is green.
2. To select the tuning band, press the BAND button ⑬. The Band indicator ④ in the display will illuminate.
3. To tune higher frequencies, press the M.S. · CD ⏭ switch (UP) ㉗. To tune lower frequencies, press the M.S. · CD ⏮ switch (DowN) ㉖.

Auto SEEK Tuning

1. For Auto SEEK Tuning, press the TUNE switch ③ until its illumination is amber.
2. Select the tuning band with the BAND button ⑬.
3. Press the ⏭ (UP) ㉗ or the ⏮ (DowN) ㉖ switch. The unit automatically tunes to the next higher or lower frequency and locks on that station.

Preset Memory Programming

Follow the instructions below to enter stations into preset memory:

1. Select the tuning band (FM1, FM2, MW, LW) ④ with the BAND button ⑬.
2. Tune in your desired station using Manual or Auto SEEK tuning.
3. Press the Preset button number 1 ⑱ for more than two seconds. The Preset Address indicator ⑦ in the display will begin to blink. Press Preset button number 1 again while the indicator is blinking.
4. The frequency you selected will be placed into the Preset Memory number 1 and will appear in the display.
   NOTE:
   If a preset memory has already been set in the same address, it will be cleared and the new station will be memorized.
5. Follow steps 2-3 for the remaining presets (2-6). This procedure should be followed for FM 1, FM 2, MW and LW.

Preset Tuning

After the preset stations have been memorized, you can tune in your desired station with just a touch of a button.

1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button ⑬.
2. Press one of the preset buttons ⑱ and the number of that preset will illuminate in the preset address display ⑦. The tuner will be tuned to the frequency programmed in that preset location.

OPERATION

Traffic Information Receiving

This model is equipped with traffic information receiving apparatus to be used Germany where the traffic information is broadcast in FM. The following is how this unit to receive traffic information broadcasting.

1. Select FM position.
2. Depress the SDK switch ㉘ and tune to a station. If the station is a traffic inf station, the SK indicator ㉓ will glow and show the reception of a broadcast f traffic information station.
   NOTE: SK Indicator
   When SK signal is received irrespective of the SDK position, the SK indicator illuminate.
3. In the SDK mode, stations other than traffic information stations are muted a out. Therefore, it is easy to select a traffic information station.
4. As the signal of the tuned traffic information station becomes weak, the SK i will extinguish. Then after the lapse of 25 seconds, a rhythmical alarm will s urge retuning to another stronger station. If the reception of further traffic in is required, tune in the desired traffic information station. When received, th will stop and the SK indicator illuminates. Since the alarm will continue if no from any other traffic stations can be received, release SDK switch for recep normal broadcasting.
5. When the unit is playing a CD with the SDK switch pushed in and tuned to a information station, the CD play is interrupted and changed to FM radio if the tuned station begins a traffic information message. When the message is o unit reverts to CD play automatically.
6. Even if the VOLUME control is set to the minimum position, the volume of th information will be automatically adjusted to proper level. After the message sound volume returns to the previously adjusted level.
7. If traffic information reception is no longer necessary, release SDK switch for radio reception.

NOTE:

When the SDK switch is pressed and there is no SK signal, ALARM will sounc lapse of 25 seconds. Press the SDK switch again to stop it.

NOTE:

This unit has a special volume control on the left side of the unit for adjusting volume level for SDK reception and the alarm which will sound when there is no in the SDK mode. Set the volume control ㉘ to the minimum level position, and special volume control on the left side of the unit to your desired level with a sc

OPERATION

ıg

ı Tuning, press the TUNE switch ③ until its illumination is green.
he tuning band, press the BAND button ⑬. The Band indicator ④ in the
l illuminate.
ȝher frequencies, press the M.S. · CD ⏭ switch (UP) ㉗. To tune lower
s, press the M.S. · CD ⏮ switch (DowN) ㉖.

uning

EEK Tuning, press the TUNE switch ③ until its illumination is amber.
tuning band with the BAND button ⑬.
⏭ (UP) ㉗ or the ⏮ (DowN) ㉖ switch. The unit automatically tunes to
ıgher or lower frequency and locks on that station.

ıry Programming

nstructions below to enter stations into preset memory:
tuning band (FM1, FM2, MW, LW) ④ with the BAND button ⑬.
ur desired station using Manual or Auto SEEK tuning.
Preset button number 1 ⑱ for more than two seconds. The Preset Address
) in the display will begin to blink. Press Preset button number 1 again
ndicator is blinking.
ıncy you selected will be placed into the Preset Memory number 1 and will
:he display.

ıet memory has already been set in the same address, it will be cleared and
:ation will be memorized.
ps 2-3 for the remaining presets (2-6). This procedure should be followed
FM 2, MW and LW.

ȝ

eset stations have been memorized, you can tune in your desired station
ıch of a button.
tuning band (FM1, FM2, MW or LW) with the BAND button ⑬.
of the preset buttons ⑱ and the number of that preset will illuminate in the
lress display ⑦. The tuner will be tuned to the frequency programmed in
t location.

OPERATION

Traffic Information Receiving

This model is equipped with traffic information receiving apparatus to be used in West Germany where the traffic information is broadcast in FM. The following is how to use this unit to receive traffic information broadcasting.

1. Select FM position.
2. Depress the SDK switch ㉘ and tune to a station. If the station is a traffic information station, the SK indicator ㉓ will glow and show the reception of a broadcast from a traffic information station.
   NOTE: SK Indicator
   When SK signal is received irrespective of the SDK position, the SK indicator will illuminate.
3. In the SDK mode, stations other than traffic information stations are muted and cut out. Therefore, it is easy to select a traffic information station.
4. As the signal of the tuned traffic information station becomes weak, the SK indicator will extinguish. Then after the lapse of 25 seconds, a rhythmical alarm will sound to urge retuning to another stronger station. If the reception of further traffic information is required, tune in the desired traffic information station. When received, the alarm will stop and the SK indicator illuminates. Since the alarm will continue if no signals from any other traffic stations can be received, release SDK switch for reception of normal broadcasting.
5. When the unit is playing a CD with the SDK switch pushed in and tuned to a traffic information station, the CD play is interrupted and changed to FM radio if the pre-tuned station begins a traffic information message. When the message is over, the unit reverts to CD play automatically.
6. Even if the VOLUME control is set to the minimum position, the volume of the traffic information will be automatically adjusted to proper level. After the message, the sound volume returns to the previously adjusted level.
7. If traffic information reception is no longer necessary, release SDK switch for normal radio reception.

NOTE:

When the SDK switch is pressed and there is no SK signal, ALARM will sound after the lapse of 25 seconds. Press the SDK switch again to stop it.

NOTE:

This unit has a special volume control on the left side of the unit for adjusting the volume level for SDK reception and the alarm which will sound when there is no SK signal in the SDK mode. Set the volume control ㉘ to the minimum level position, and adjust the special volume control on the left side of the unit to your desired level with a screwdriver.

OPERATION

● CD OPERATION

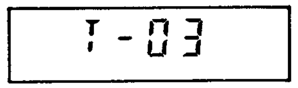
If the unit is not in the CD mode, press the DISC button ⑭.

Load

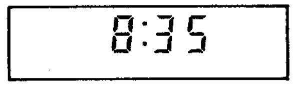
1. Insert a disc into the Disc Slot ⑧. When the disc is halfway in, the power loading system will pull the disc in and guide it into the play position.
2. If the disc is left at least halfway in, press the DISC button ⑭ or press the disc edge lightly to move it forward. "LOAd" will show in the display while loading.
3. When the unit is in the CD mode, the digital display ⑥ shows " T-00 " for a second while the data on the disc is read.
4. When a disc is loaded while the unit is in the tuner mode, it will automatically switch to the CD mode.

Track/Elapsed Time Display Switching

Press the DISP switch ③ for the Track Number being played and the Elapsed Time for the current track to be shown in the digital display ⑥. See below.



Track Mode



Time Mode

Normal Play (Repeat All)

1. Load the Disc.
2. The digital display ⑥ will show " T-00 " for a second, then " T-01 " will be displayed and the first track on the disc will begin playback.
3. After the last track on the disc is played back, the pickup will return to the beginning of the disc and begin playback from that point.

Disc Eject and Reload

Press the EJECT button ⑪. The disc will come halfway out. If the eject status is maintained more than 15 seconds in case of 5-inch disc, the self loading system will be automatically actuated and the disc will be reloaded into the mechanism and the player will be set to PAUSE mode.

Press the DISC (▶/❚❚) button ⑭ to resume playback. When using 3-inch discs, the eject status continues until the disc is pushed back in.

Pause

Press the DISC (▶/❚❚) button ⑭ to stop playback temporarily. Playback is interrupted, but the disc remains inside the player. To resume playback, press the DISC (▶/❚❚) button ⑭ again.

OPERATION

Music Sensor (Skip)

This feature allows you to access the beginning of your musical track selection simply and quickly. It is functional in the play or pause mode. The digital display ⑥ shows the track number you have selected.

- To advance to the next track on the disc, press the ⏭ side of the M.S. · CD switch ㉗.
  1. Playback stops, the pickup moves up to the beginning of the next track. That track number appears in the digital display ⑥.
  2. Playback begins immediately.
  3. If you wish to access a track further ahead on the disc, continue pressing the ⏭ side of the M.S. · CD switch ㉗ until you reach the track of your choice.

- To replay the track that is currently playing, press the ⏮ side of the M.S. · CD switch ㉖.
  1. Playback stops, the pickup moves back to the beginning of the current track. The track number in the digital display ⑥ remains the same.
  2. Playback begins immediately from the beginning of the track.
  3. If you access a track further towards the beginning of the disc, continue pressing the ⏮ side of the M.S. · CD switch ㉖ until you reach the track of your choice.

Fast Forward/Fast Backward

The Fast Forward/Fast Backward feature works in both play and pause modes.

1. Press either the M.S. · CD ⏭ ㉗ or the M.S. · CD ⏮ ㉖ switch and hold it for more than 2 seconds.
2. To move the pickup forward rapidly, hold down the M.S. · CD UP ⏭ switch ㉗.
3. To move the pickup backward rapidly, hold down the M.S. · CD DN ⏮ switch ㉖.
4. When the pickup reaches the end of the disc, it automatically returns to the beginning. Playback will then start from the beginning of the disc.

REPEAT (One)

This feature allows you to continuously playback a single track.

1. Press the REPEAT button ⑯.
2. The musical track shown in the digital display ⑥ will be played back repeatedly.
3. To defeat the Repeat function, press the REPEAT button a second time.

SCAN

Press this button and the player will playback the first 10 seconds of each track in succession. This function is useful in searching for a specific program ahead on a disc. Press the SCAN button ⑮ a second time to deactivate this function.

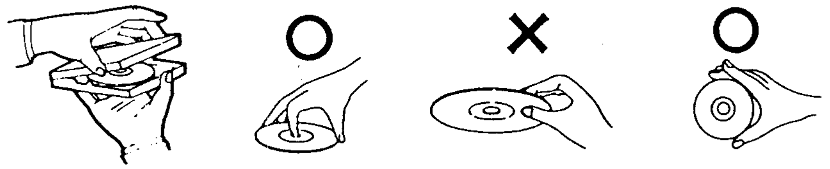
M.I.X. (Random Play)

Depress the M.I.X. button ⑰ while in the CD mode and the musical tracks will be played back in a random sequence generated by the microprocessor. After all the tracks on the disc have been played back once, the player will begin a new random sequence.

PROPER CARE OF YOUR DISC

Proper Handling

Handle your disc as shown. Do not drop the disc while handling. Hold the disc so you will not leave fingerprints on the surface. If the surface is scratched, it may cause the pickup to skip signal tracks. Do not affix tape, paper, or gummed labels on the disc. Do not write on the disc.



Keep Your Discs Clean

Fingerprints, dust, or soil on the surface could cause the pickup to skip signal tracks. For routine cleaning, wipe the playing surface with a clean, soft cloth from the center of the disc to the outer edge. If the surface is heavily soiled, dampen a clean soft cloth in a solution of mild neutral detergent before cleaning the disc. (Fig. A)

Damaged Disc

Do not attempt to play cracked, warped, or otherwise damaged discs. Playing a bad disc could severely damage the playback mechanism.

Storage

When not in use, place your discs in their individual cases and store them in a cool place away from the sun, heat, and dust.

Never Attempt the Following

Do not grip or pull out the disc while it is being pulled back into the player by the automatic Reloading mechanism. (Fig. B)

Do not pull the unit out from the dash while a disc is playing. The disc will be unstable in the unit and may be damaged.

Do not attempt to insert a disc into the unit when the unit power is off.

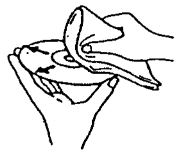


Fig. A

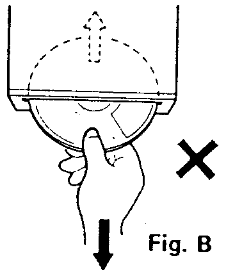


Fig. B

PRECAUTIONS

Replacing the Fuse

When replacing a fuse, make sure the replacement fuse has the sar (3A), as shown on the fuse holder. If the fuse continues to blow, carefu electrical connections for short circuits. It is also a good idea to check tl regulator. Do not attempt to repair or service the unit yourself. Return tl nearest authorized Alpine Service Station for servicing.

Eject Auto-Lock

Be sure to eject the compact disc from the player before removing tl dash. It is necessary to remove the CD in order for the locking mechar activated. Failure to do this may cause damage to the compact disc or mechanism.

Thermal Protection Circuit

Be sure the temperature inside the vehicle is between +60°C (+140 (+14°F) before attempting to play a disc. When the temperature is ove the protection circuit functions to stop the CD player, and "— — — H" i

Moisture Condensation

You may notice the playback sound wavering. When this happens, r from the player and wait about an hour until the moisture evaporates.

Handling of the Unit When Removed From Quick Release Bracke

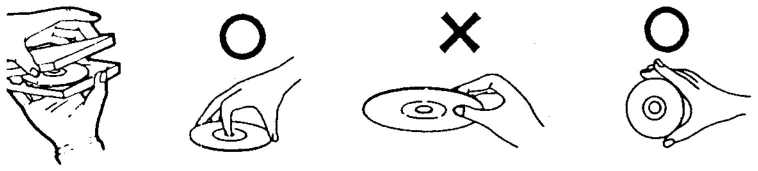
When the 7903MS is removed from the in-dash bracket, remember t

1. Do not drop or apply shock to the unit. It might cause permanent d
2. Keep the unit away from:
   a: Water and moisture
   b: Direct sun and heat
   c: Excessive dust
   d: Strong magnetic field such as an audio speaker, magnet, or TV.
3. Your authorized Alpine dealer carries an optional carrying case for tı player when it is out of the vehicle.

PROPER CARE OF YOUR DISC

lling

r disc as shown. Do not drop the disc while handling. Hold the disc so you fingerprints on the surface. If the surface is scratched, it may cause the signal tracks. Do not affix tape, paper, or gummed labels on the disc. Do he disc.



iscs Clean

s, dust, or soil on the surface could cause the pickup to skip signal tracks. eaning, wipe the playing surface with a clean, soft cloth from the center of e outer edge. If the surface is heavily soiled, dampen a clean soft cloth in a ild neutral detergent before cleaning the disc. (Fig. A)

sc

mpt to play cracked, warped, or otherwise damaged discs. Playing a bad verely damage the playback mechanism.

in use, place your discs in their individual cases and store them in a cool om the sun, heat, and dust.

pt the Following

or pull out the disc while it is being pulled back into the player by the loading mechanism. (Fig. B)
the unit out from the dash while a disc is playing. The disc will be unstable d may be damaged.
mpt to insert a disc into the unit when the unit power is off.

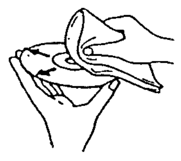


Fig. A

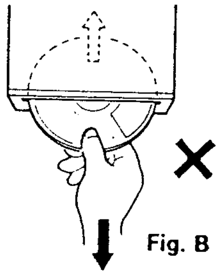


Fig. B

PRECAUTIONS

Replacing the Fuse

When replacing a fuse, make sure the replacement fuse has the same amperage rating (3A), as shown on the fuse holder. If the fuse continues to blow, carefully check all electrical connections for short circuits. It is also a good idea to check the car's voltage regulator. Do not attempt to repair or service the unit yourself. Return the unit to your nearest authorized Alpine Service Station for servicing.

Eject Auto-Lock

Be sure to eject the compact disc from the player before removing the unit from the dash. It is necessary to remove the CD in order for the locking mechanism to be activated. Failure to do this may cause damage to the compact disc or the laser mechanism.

Thermal Protection Circuit

Be sure the temperature inside the vehicle is between +60°C (+140°F) and −10°C (+14°F) before attempting to play a disc. When the temperature is over +60°C (+ 140°F), the protection circuit functions to stop the CD player, and "— — — H" is displayed.

Moisture Condensation

You may notice the playback sound wavering. When this happens, remove the disc from the player and wait about an hour until the moisture evaporates.

Handling of the Unit When Removed From Quick Release Bracket

When the 7903MS is removed from the in-dash bracket, remember these care tips:

1. Do not drop or apply shock to the unit. It might cause permanent damage.
2. Keep the unit away from:
   a: Water and moisture
   b: Direct sun and heat
   c: Excessive dust
   d: Strong magnetic field such as an audio speaker, magnet, or TV.
3. Your authorized Alpine dealer carries an optional carrying case for transporting the player when it is out of the vehicle.

PRECAUTIONS

Installation Location

The 7903MS is designed for in-dash mounting. For optimum performance, make sure the player will not be exposed to:

1. Direct sun and heat
2. High humidity
3. Excessive dust
4. Excessive vibrations.

Caution During Playback

Playing a disc while driving on a very bumpy road may result in skips, but this will not scratch the disc or damage the player.

1. Your player accepts only one disc at a time for playback. Do not attempt to load more than one disc.
2. Make sure the label side is facing up when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset switch ⑫ with a pointed object such as a sharp pencil.

Playing 3-inch CDs

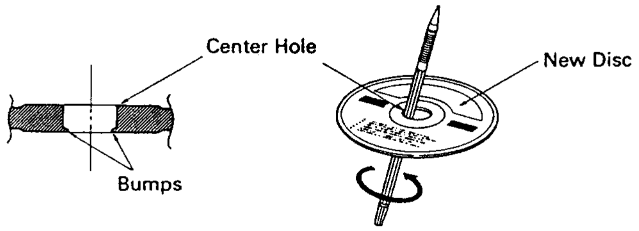
When playing 3-inch CDs in the 7903MS, do not use an adaptor ring. Adaptor rings may become stuck inside the player and damage the mechanism.

Caution for New Discs

When a newly purchased disc is inserted, it may be ejected after initial loading. This is caused by small bumps around the center hole of the disc, which prevents stable loading to the correct position.
Remove bumps by rubbing inside the hole with a ball-point pen or other such instrument, then insert the disc again.

Please note

The mechanism automatically ejects such a disc as a protective measure, and this is not a faulty operation.



Disassembly Instructions

1. Removal of the nosepiece

(1) After removal of the top cover, remove the volume, fader control and two slide volume knobs as shown in Figure 1.

(2) Remove the six hooks (A) as shown in Figures 1, 2 and 3.
The nosepiece will be removed.

2. Removal of the bottom chassis

(1) After removal of the nosepiece, remove six screws marked "△" and solder (A) as shown in Figures 1, 2 and 4.

(2) To remove the bottom chassis, slide it by little and little with giving care to the junction sections with the front chassis and QRB Socket.

3. Removal of the CD mechanism

(1) After removal of the bottom chassis, remove three screws marked "□" as shown in Figure 5.

(2) Disconnect the two connectors from the Main P. C. board.
To remove the CD mechanism from the Main P. C. board, pull up the CD mechanism by little and little.
Give care to the 15-pins connector which connect the two parts not to bend as shown in Figure 4.

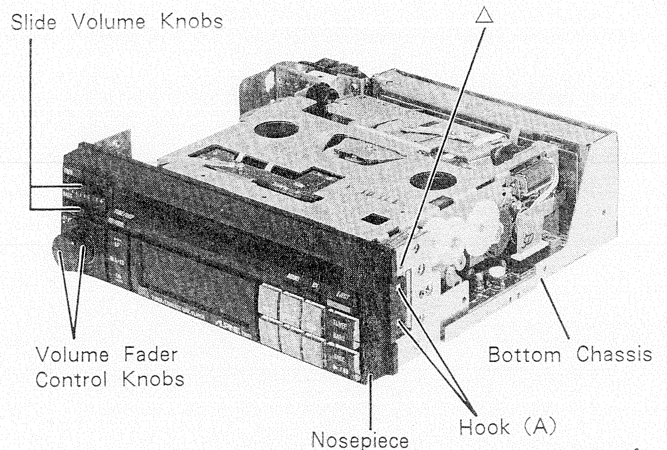

Slide Volume Knobs
△
Volume Fader Control Knobs
Bottom Chassis
Nosepiece
Hook (A)

Figure 1

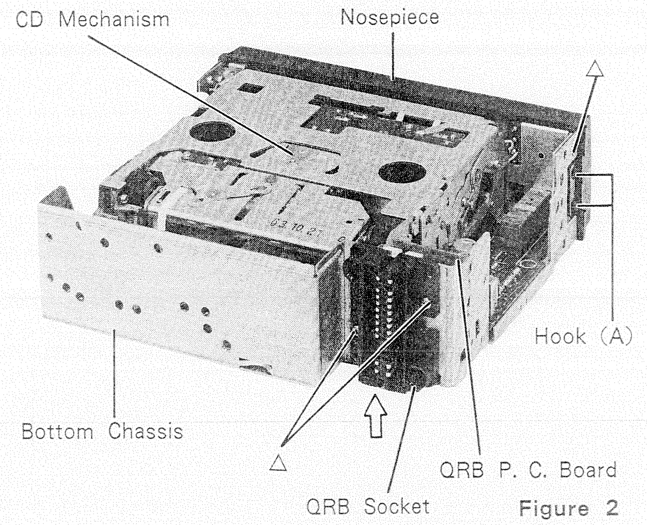

CD Mechanism
Nosepiece
△
Hook (A)
Bottom Chassis
△
QRB Socket
QRB P. C. Board

Figure 2

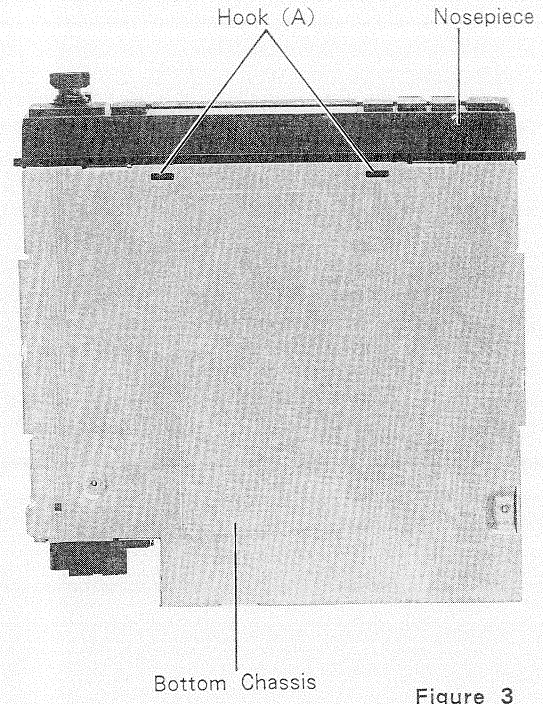

Hook (A)
Nosepiece
Bottom Chassis

Figure 3

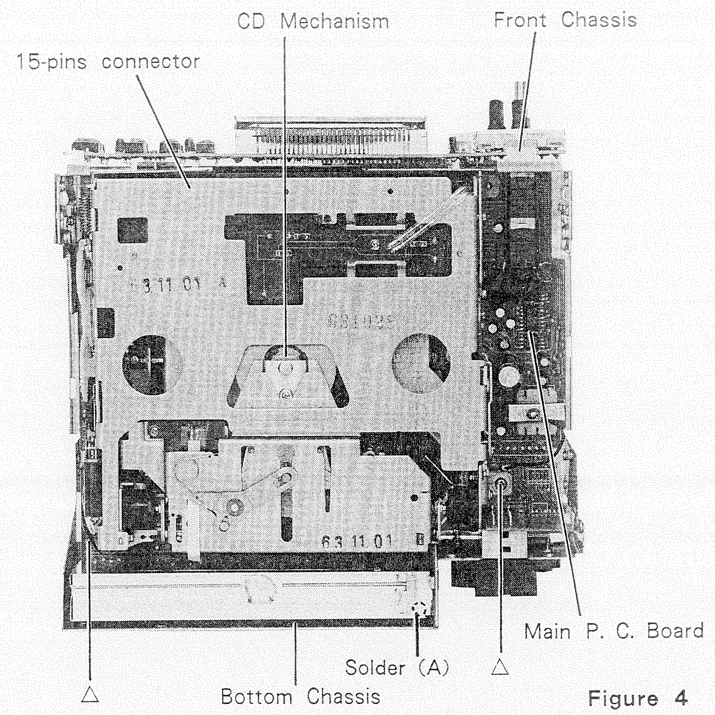

15-pins connector
CD Mechanism
Front Chassis
Main P. C. Board
Solder (A)
△
△
Bottom Chassis

Figure 4

4. Removal of the QRB P. C. Board

(1) After removal of CD mechanism, solder (B) as shown in Figure 7.

(2) Pull up the QRB P. C. board to disconnect the two connectors as shown in Figure 7.
The QRB P. C. board will be removed.

5. Removal of the Main-Front P. C. Board and Main P. C. Board

(1) After removal of the CD mechanism, reverse the three hooks (B) as shown in Figure 6.

(2) Disconnect the 20-pins connector from the Main P. C. board.
To make it easy, insert a thim stick object into an aperture and push out the Main-Front P. C. board as shown in Figure 8.
Then the Main-Front P. C. board will be removed with Main P. C. Board.

* **Notice for assembly the CD mechanism and Main-Front P. C. board into the unit.**
Give care to the 20-pins connector between the Main and the Main-Front P. C. boards and the 15-pins connector between the Main P. C. board and the CD mechanism not to bend them when assemblying the parts.

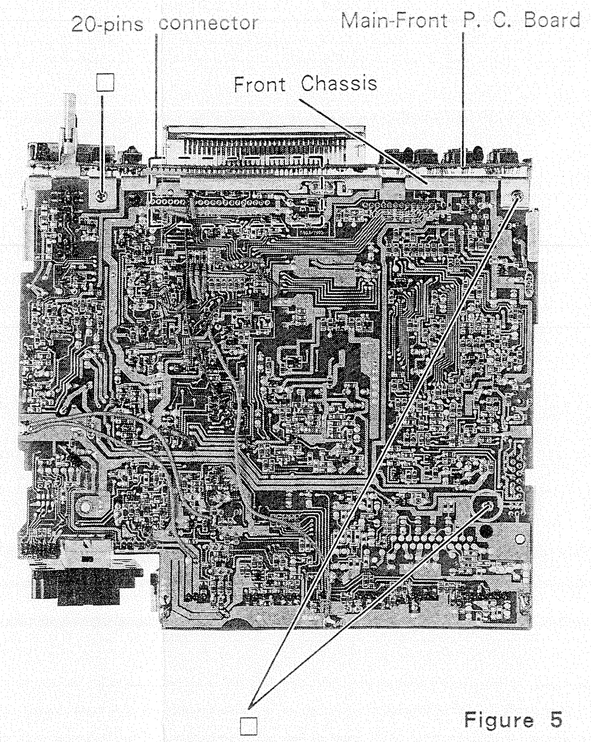

20-pins connector
Main-Front P. C. Board
□
Front Chassis
□

Figure 5

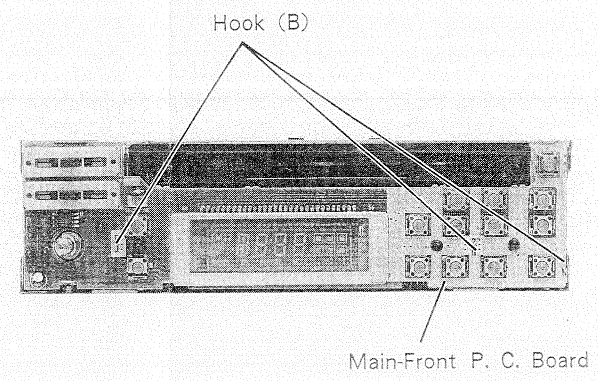

Hook (B)
Main-Front P. C. Board

Figure 6

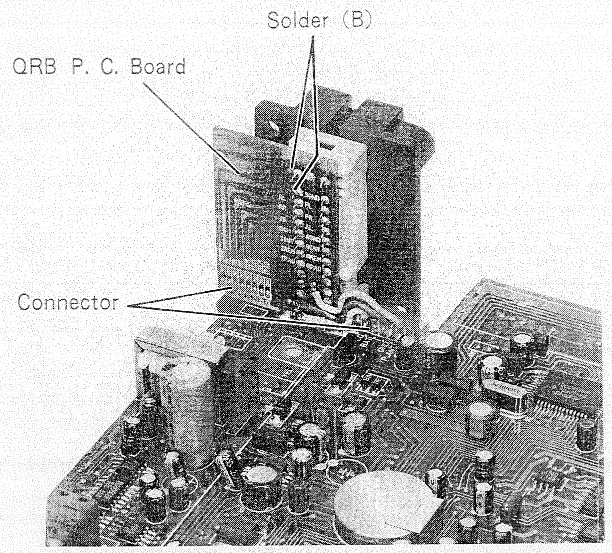

Solder (B)
QRB P. C. Board
Connector

Figure 7

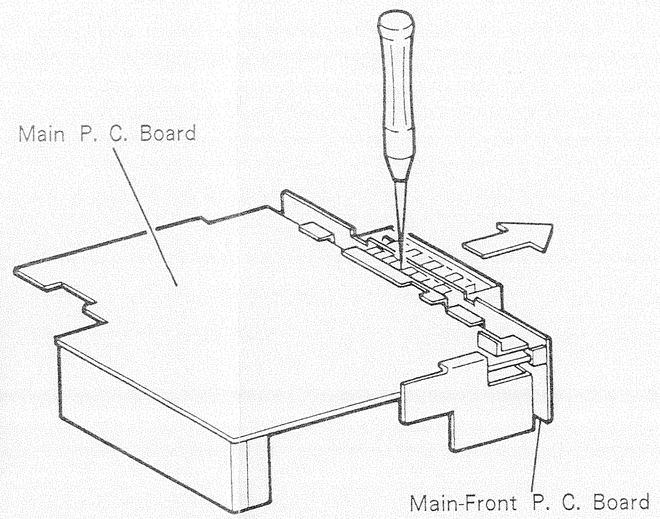

Main P. C. Board
Main-Front P. C. Board

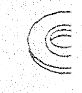
Figure 8

Adjus

1 Compact

(1) Connectic

Test



Test

(2) Control
Power
Fader C
Balance
Treble /
Other

4. Removal of the QRB P. C. Board

(1) After removal of CD mechanism, solder (B) as shown in Figure 7.

(2) Pull up the QRB P. C. board to disconnect the two connectors as shown in Figure 7.
The QRB P. C. board will be removed.

5. Removal of the Main-Front P. C. Board and Main P. C. Board

(1) After removal of the CD mechanism, reverse the three hooks (B) as shown in Figure 6.

(2) Disconnect the 20-pins connector from the Main P. C. board.
To make it easy, insert a thim stick object into an aperture and push out the Main-Front P. C. board as shown in Figure 8.
Then the Main-Front P. C. board will be removed with Main P. C. Board.

＊ **Notice for assembly the CD mechanism and Main-Front P. C. board into the unit.**
Give care to the 20-pins connector between the Main and the Main-Front P. C. boards and the 15-pins connector between the Main P. C. board and the CD mechanism not to bend them when assemblying the parts.

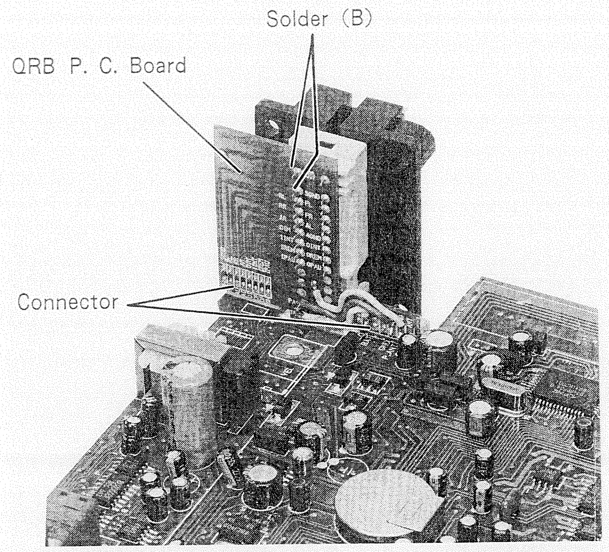

Solder (B)
QRB P. C. Board
Connector

Figure 7

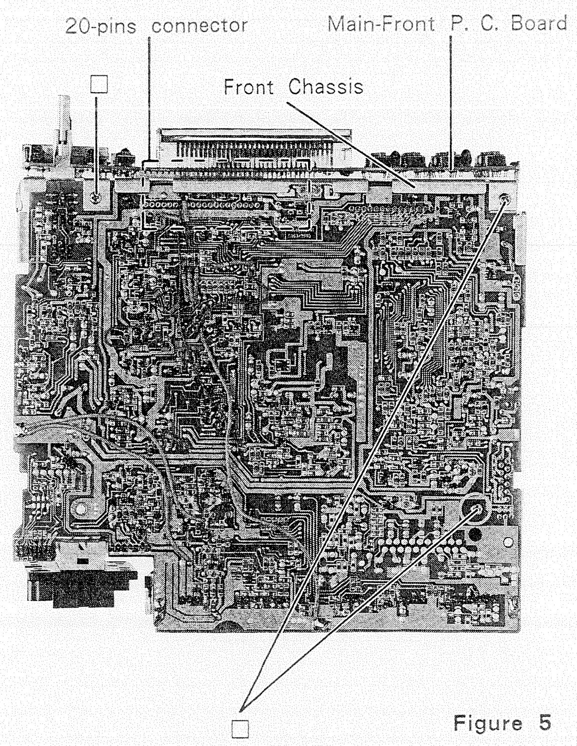

20-pins connector
Main-Front P. C. Board
Front Chassis
□
□

Figure 5

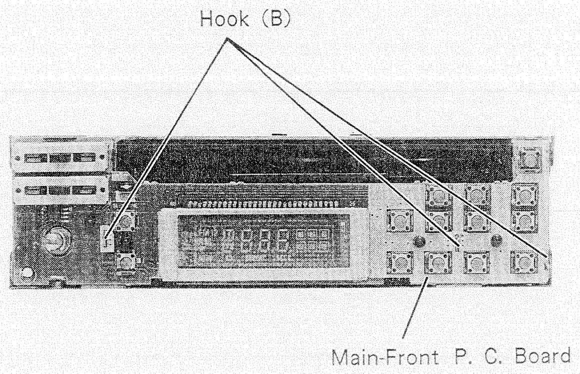

Hook (B)
Main-Front P. C. Board

Figure 6

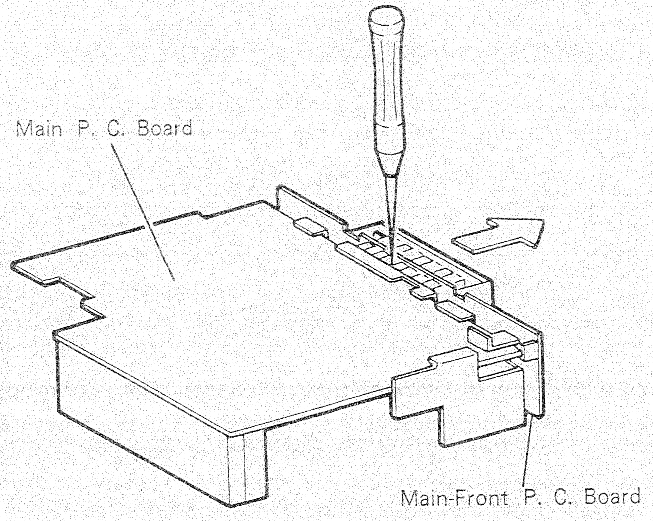

Main P. C. Board
Main-Front P. C. Board

Figure 8

Adjustment Procedures

1 Compact Disc SECTION

(1) Connections

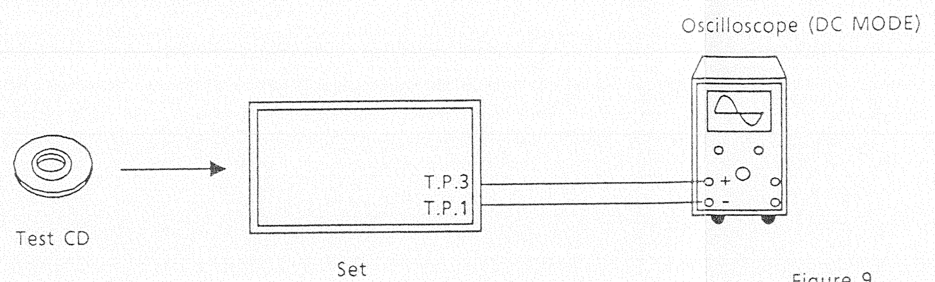

Oscilloscope (DC MODE)
Test CD
T.P.3
T.P.1
Set

Figure 9

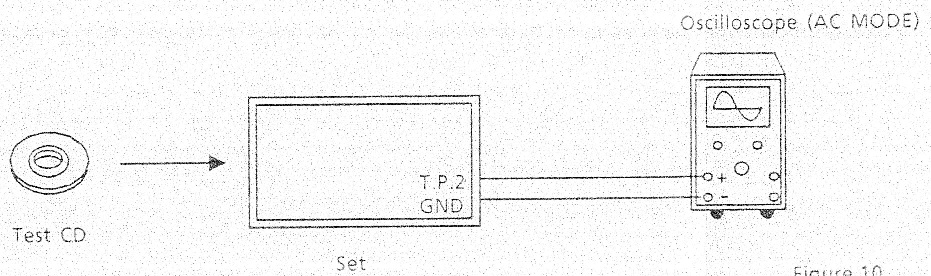
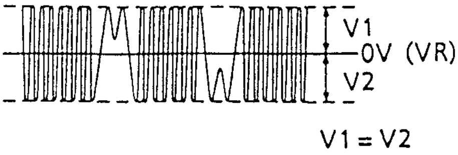
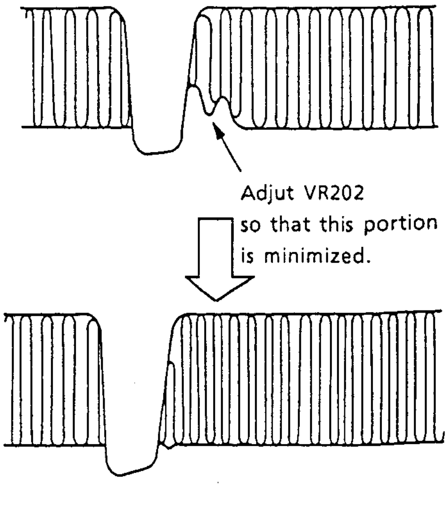

Oscilloscope (AC MODE)
Test CD
T.P.2
GND
Set

Figure 10

(2) Control Setting

Power Switch	ON
Fader Control	Mechanical Center
Balance Control	Mechanical Center
Treble / Bass Control	Mechanical Center
Other Switches	OFF

(3) Adjustment Procedures

Step	Description	Test CD	Connection	Test Point	Adjustment Point	Adjustment
1	Tracking Balance Adjustment	TCD782 Track No.8 (A-BEX)	Figure 9	T.P.1 T.P.3	VR201	① : Set the mode to playback with the test disc loaded. ② : Use wire to connect T.P.4 to T.P.5. ③ : Using the oscilloscope, measure the T.P.3 signal in reference to VR. (VR standard = 0V) ④ : Adjust VR201 so that the positive and negative deflection widths of the T.P.3 signal are at the same level, relative to VR (0V). (The entire waveform moves up and down.)  ⑤ : After adjustment, remove the wire connecting to T.P.4 to T.P.5
2	Tracking Offset Adjustment	TCD721 Track No.6 (A-BEX)	Figure 10	T.P.2	VR202	① : Set the mode to playback with the test disc loaded. ② : Using the oscilloscope, measure the T.P.2 signal. ③ : Adjust VR202 in order to minimize the waveform induced by the reaction to the omission of the T.P.2 signal. ④ : Conduct the tracking balance adjustment once again.  Adjut VR202 so that this portion is minimized.

2. DK Adjustment

2-1 Dummy Antenna

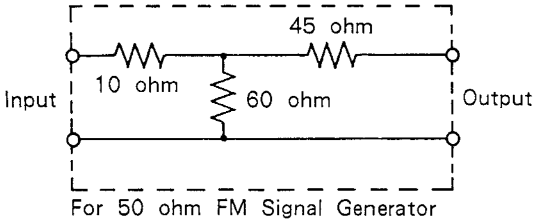

45 ohm
10 ohm
60 ohm
Input
Output
For 50 ohm FM Signal Generator

Figure 11

2-2 Connections

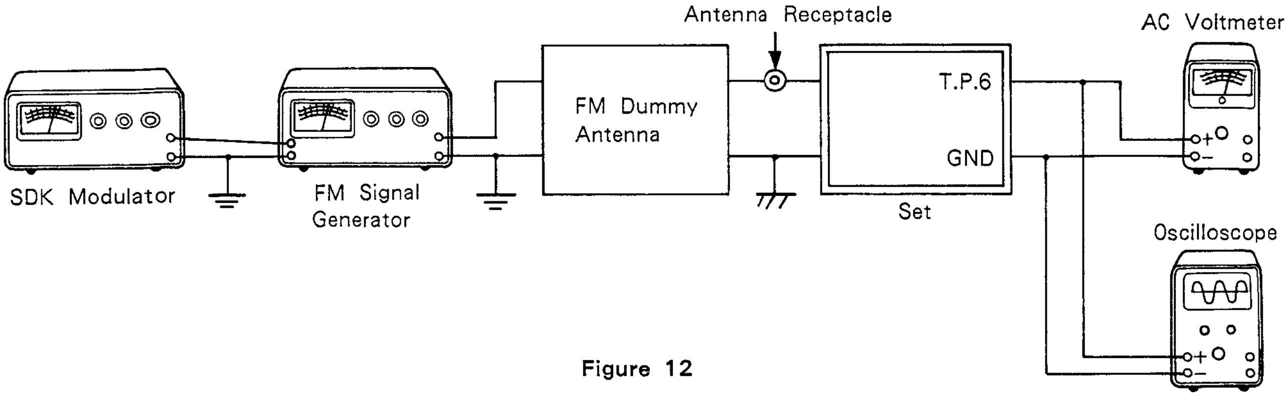
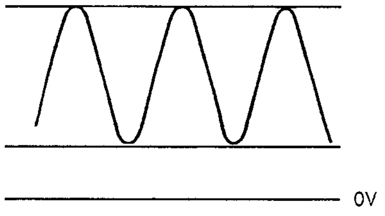

Antenna Receptacle
AC Voltmeter
FM Dummy Antenna
T.P.6
GND
SDK Modulator
FM Signal Generator
Set
Oscilloscope

Figure 12

2-3 Adjustment Procedures

Step	Description	Connection	Test Point	Adjustment
1	DK Adjustment	Figure 12	T.P.6	① Set SDK Switch to ON. ② Set the unit frequency to 98.1MHz. ③ Set the output of the signal generator to 72dB, 98.1MHz. ④ Adjust VR101 so that DK output waveform at T.P.6 is maximum.  0V

Adjustment Locations

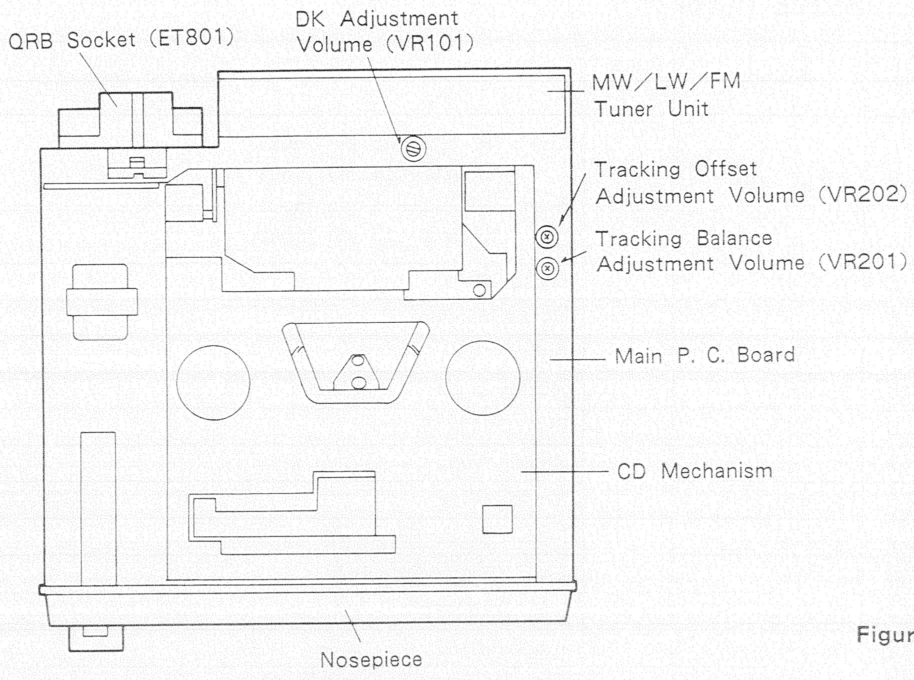
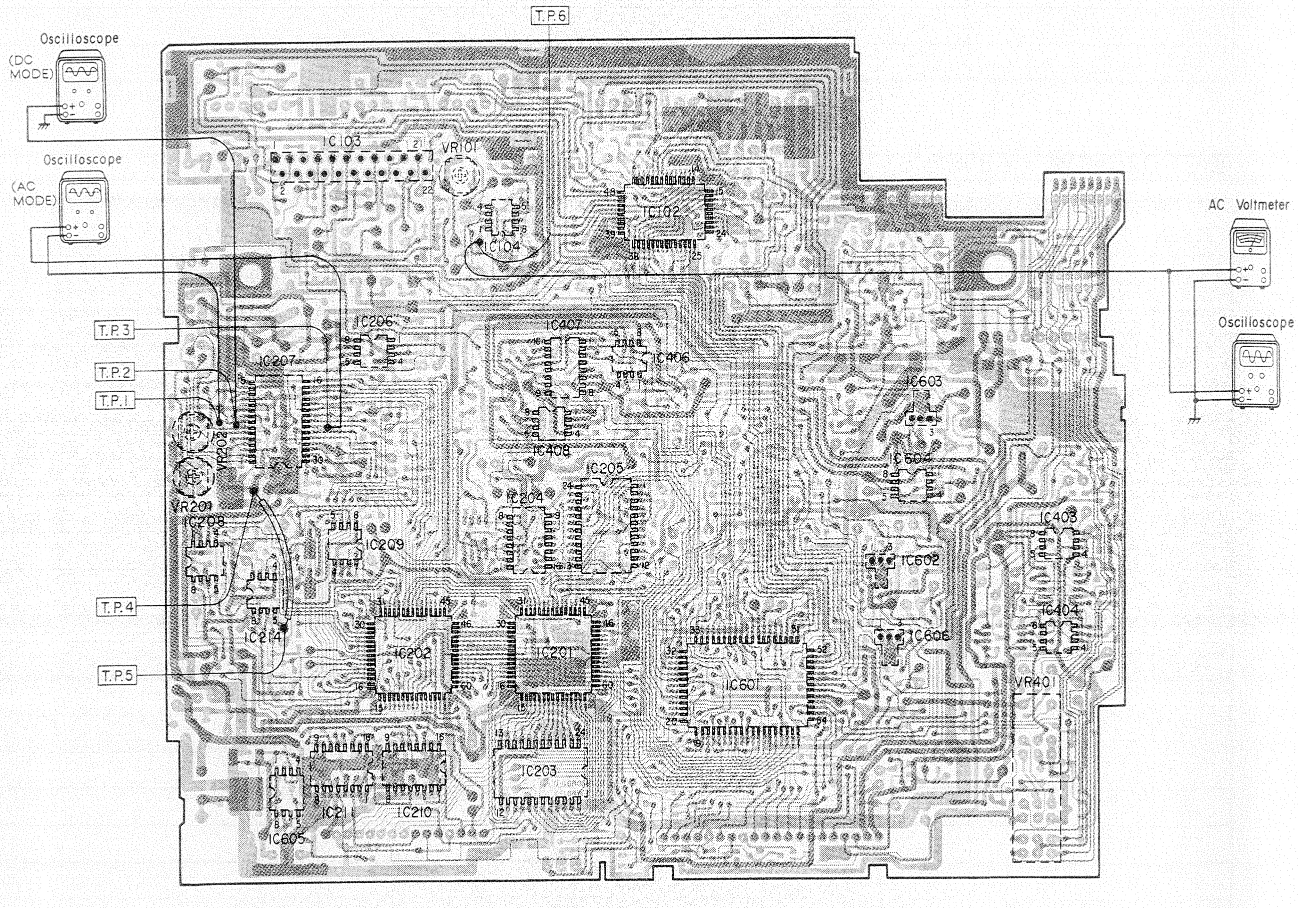

QRB Socket (ET801)
DK Adjustment Volume (VR101)
MW/LW/FM Tuner Unit
Tracking Offset Adjustment Volume (VR202)
Tracking Balance Adjustment Volume (VR201)
Main P. C. Board
CD Mechanism
Nosepiece

Figure 13


T.P.6
Oscilloscope
(DC MODE)
Oscilloscope
(AC MODE)
T.P.3
T.P.2
T.P.1
T.P.4
T.P.5
AC Voltmeter
Oscilloscope
IC103
VR101
IC104
IC102
IC206
IC207
IC407
IC406
IC408
IC205
IC204
IC209
IC208
IC214
VR202
VR201
IC603
IC604
IC403
IC602
IC404
IC606
IC202
IC201
IC601
VR401
IC203
IC211
IC210
IC605

Main P. C Board (Bottom Side)

Description of IC Terminal

● μ PD6376 (IC204)

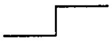
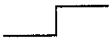
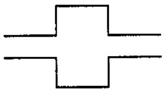
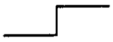
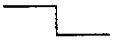
No.	Symbol	I/O	Terminal description
1	4/8fs SEL	I	Low : "R"Data → 15 pin input "L"Data → 15 pin input High : "R"Data → 14 pin input "L"Data → 15 pin input
2	D. GND		Digital GND
3	NC		No Connection
4	D. V_{DD}		Digital V_{DD}
5	A. GND		Analog GND
6	R. OUT	O	R-ch OUTPUT
7	A. V_{DD}		Analog V_{DD}
8	A. V_{DD}		Analog V_{DD}
9	R. REF		R-ch Voltage Reference
10	L. REF		L-ch Voltage Reference
11	L. OUT	O	L-ch OUTPUT
12	A. GND		Analog GND
13	LRCK/WDCK	I	Left/Right Clock WORD Clock
14	LRSEL/RSI	I	Left/Right Selection R-ch Series Input
15	SI/LSI	I	Series Input L-ch Series Input
16	CLK	I	CLOCK

● CXD2551M (IC205)

No.	Symbol	I/O	Terminal description
1	TEST	I	Test pin
2	8fs/$\overline{\text{4fs}}$	I	Fir 3 designation "H" ; 8fs, "L" ; 4fs
3	XOUT	O	Clock output (f=384fs)
4	XIN	I	Clock input (f=384fs)
5	NC		N. C.
6	V_{DD}		Power supply (5V)
7	NC		N. C.
8	NC		N. C.
9	BCK	I	BCK input
10	DATA	I	Serial data input
11	LRCK	I	LRCK input
12	$\overline{\text{INIT}}$	I	Timing generator start ↑
13	LATCH	I	Latch clock input
14	SHIFT	I	Shift clock input
15	ATT	I	ATT data input
16	BCKO	O	BCK output
17	NC		N. C.
18	NC		N. C.

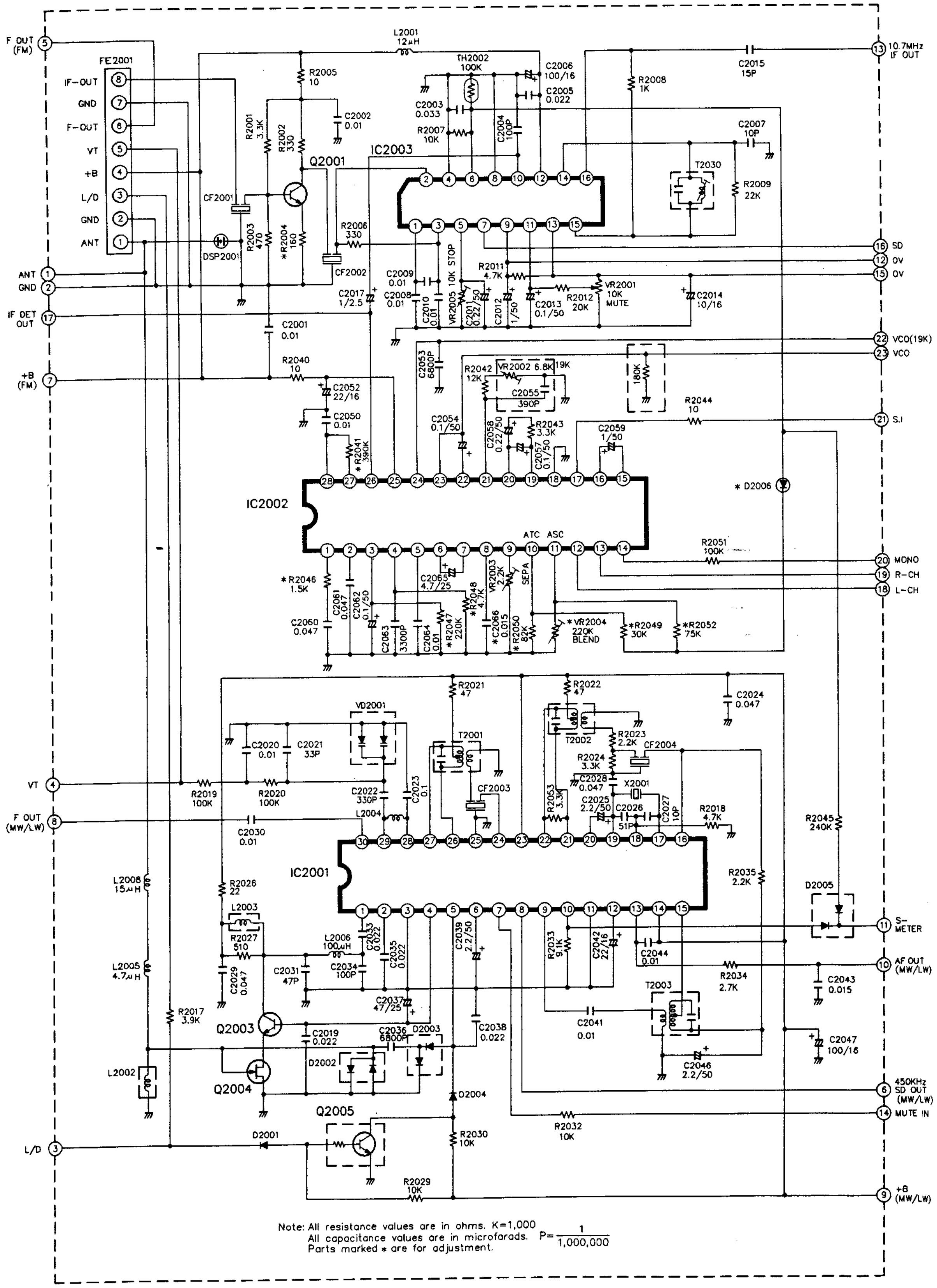
No.	Symbol	I/O	Terminal description
19	Vss (GND)		GND
20	NC		N. C.
21	DATAR	O	4fs : WCK output 8fs : R-ch serial data output
22	DATAL	O	4fs : L-ch, R-ch division serial data output 8fs : L-ch serial data output
23	LRCKO	O	LRCK output
24	SLOT	I	Output slot designation "H" : 18bit slot, "L" : 16bit slot

●15263W01, 25914W01 (IC601)

No.	Symbol	Status	I/O	Terminal description
1	8cm END	H	I	Disc detector photo SW input  8cm END detection
2	8cm RELOAD	H	I	Disc detector photo SW input  8cm Reload detection
3	12cm LOAD END 12cmEJECT END	L H	I	Disc detector photo SW input  12cm Load End detection 12cm EJECT END detection
4	CAM END	L	I	CLAMP END detection SW input
5	BUS 0		I/O	Com. line to TC9201
6	BUS 1		I/O	Com. line to TC9201
7	BUS 2		I/O	Com. line to TC9201
8	BUS 3		I/O	Com. line to TC9201
9	DA/CO		I/O	Com. line to TC9201
10	WTO	L	O	Watch • dog timer output
11	Disc IN	H	I	Disc detection photo SW input  Disc IN detection
12	Limit SW	L	I	Pick-up inner limit detector input 
13	FL-CLOCK		O	Clock output to FL driver
14	FL-DATA		O	Data output to FL driver
15	FL-CE	H	O	Data latch output to FL driver
16	F-BLANK	L	O	ON/OFF switching to FL driver L : OFF, DIM : pulse
17	SEEK	H	O	H : Tuner SEEK (: LED ON)
18	Load-REV	H	O	Loading motor inverse rotation output
19	Load-FWD	H	O	Loading motor normal rotation output
20	SOLNOID	H	O	DP-Mechanism solenoid driver output
21	V CONT	H	O	Servo circuit power supply controller output
22	Load Cont	H	O	DP mechanism loading circuit power supply controller output
23	LAMP	H	O	LAMP power supply controller output Power SW ON : H
24	LATCH	H	O	Latch clock input
25	GND			GND
26	Vss			GND

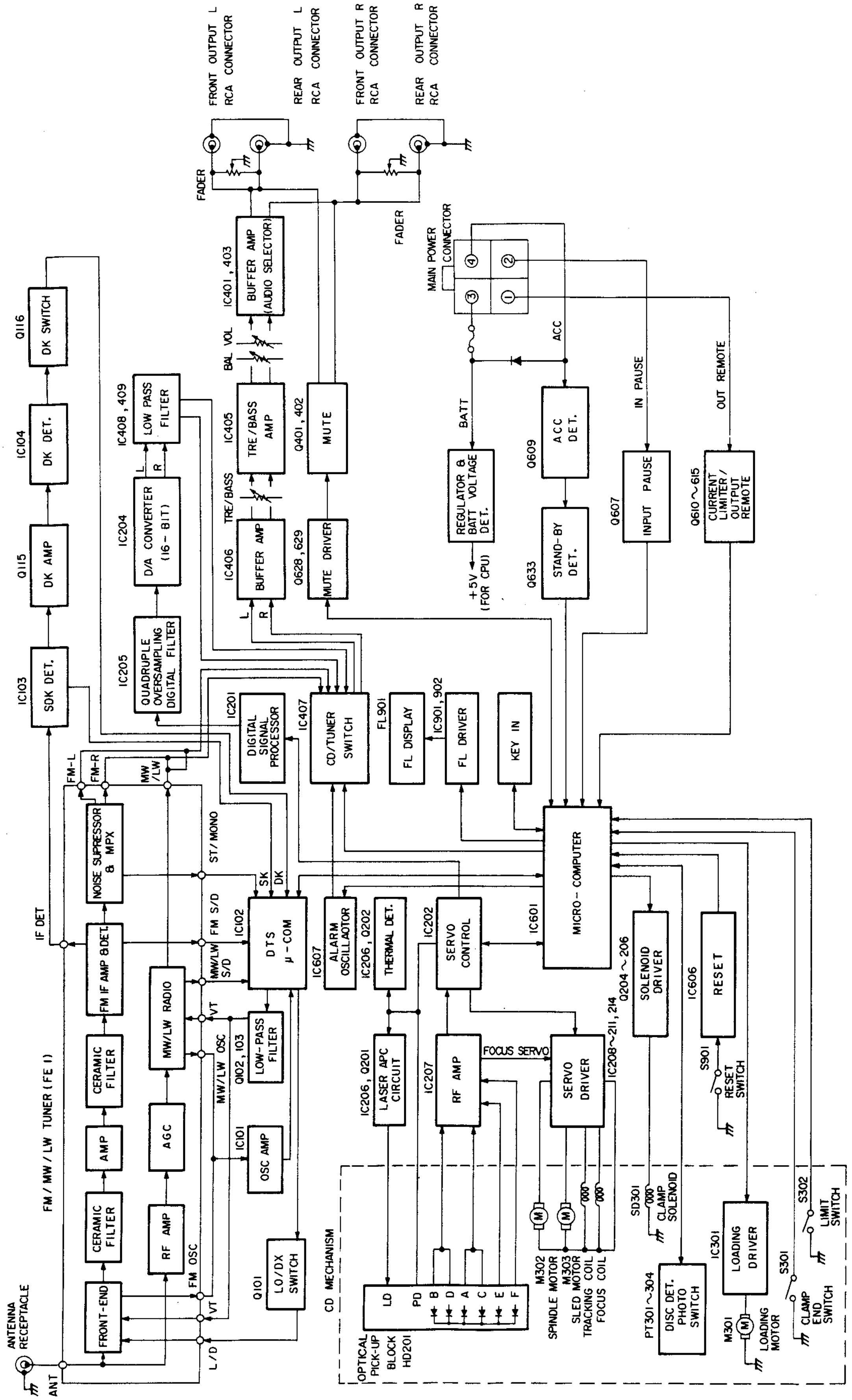
No.	Symbol	Status	I/O	Terminal description
27	SHIFT		O	Shift clock input
28	ATT		O	ATT data input
29	NC			
30	NC			
31	ALM		O	Alarm output ON/OFF switching signal.
32	SDK-TONE		O	Audio signal switching in alarm mode.
33	CD/TUNER		O	CD/Tuner source switching signal H : CD, L : Tuner
34	BUCK		O	Com. line to TC9201 Clock output
35	NC			OPEN
36	DTS-CE	H	O	DTS processor CE control output
37	Single		O	8cm/12cm CD spindle motor status switching H : 8cm, L : 12cm
38	DIMMER	L	I	Dimmer input L : Dimmer ON
39	IN PAUSE 1	L	I	Reciprocal reset signal IN : Pause signal from inferior source unit
40	IN PAUSE 2	L	I	Reciprocal reset signal IN. Pause signal from inferior source unit
41	A-HOLD		I	ACC detection input H : ACC ON, L : ACC OFF
42	D-START	H	I	Com. line to DTS processor Com. start signal
43	RESET	L	I	Micro-processor reset IN L : Reset
44	X'tal-IN		I	Crystal input
45	X'tal-OUT		O	Crystal output 4.19MHz
46	HOLD		I	Stand-by release input Stand-by release in ACC ON ; H : Stand-by release with B-HOLD stand-by release
47	TSENS	H	I	Thermal sensor IN for laser diode protection H : Protection circuit act display…H
48	IN INT	L	I	+5V
49	B-HOLD	L	I	Battery detection input. L : Forced stand-by
50	D-MUTE	L	I	DTS processor Mute. L : Mute
51	D-STS		I	Com. line to DTS processor. Data input
52	D-CMD		O	Com. line to DTS processor. Data output
53	D-CLK		I	Com. line to DTS processor. Clock output
54	OUT-INT	H	O	Signal output terminal to stop enternal unit when DK signal enters in SDK mode.
55	Power ON	H	O	Unit power supply control H : Power switch ON
56	A-MUTE	L	O	Audio mute output
57	REMOTE	H	O	Reciprocal reset out. REMOTE out signal to inferior source unit
58	V_{DD}		I	+5V Micro processor power supply
59	VAREF		I	+5V A/D converter reference power supply
60	VASS		I	GND
61	Power SW		I	Power switch input. L : Power ON
62	KEY A/D 0		I	KEY input A/D converter 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6 V_{DD} into digit
63	KEY A/D 1		I	KEY input A/D converter 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6 V_{DD} into digit
64	KEY A/D 2		I	KEY input A/D converter 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6 V_{DD} into digit

Tuner Schematic Diagram

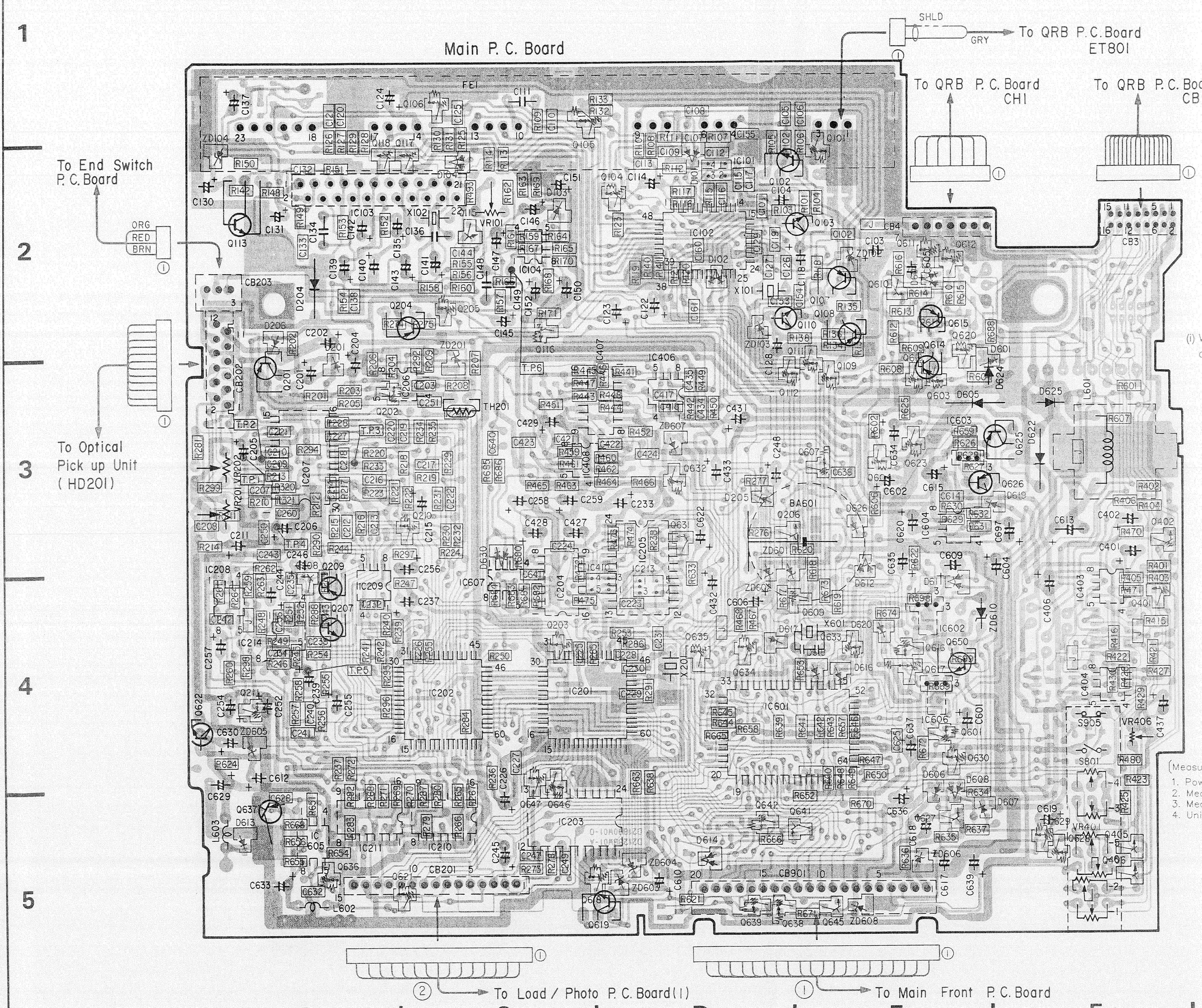

F OUT (FM) ⑤
FE2001
IF-OUT ⑧
GND ⑦
F-OUT ⑥
VT ⑤
+B ④
L/D ③
GND ②
ANT ①
ANT ①
GND ②
IF DET OUT ⑰
+B (FM) ⑦
VT ④
F OUT (MW/LW) ⑧
L/D ③
L2001 12μH
R2005 10
TH2002 100K
C2006 100/16
C2005 0.022
R2008 1K
C2015 15P
10.7MHz IF OUT ⑬
C2003 0.033
C2002 0.01
R2001 3.3K
R2002 330
R2007 10K
C2004 100P
C2007 10P
Q2001
IC2003
T2030
R2009 22K
CF2001
DSP2001
R2003 470
*R2004 160
R2006 330
CF2002
C2009 0.01
C2008 0.01
C2017 1/2.5
C2010 0.01
VR2005 10K STOP
C2011 0.22/50
R2011 4.7K
C2012 1/50
C2013 0.1/50
R2012 20K
VR2001 10K MUTE
C2014 10/16
SD ⑯
0V ⑫
0V ⑮
C2001 0.01
R2040 10
C2052 22/16
C2050 0.01
*R2041 390K
C2053 6800P
R2042 12K
VR2002 6.8K
19K
C2055 390P
180K
VCO(19K) ㉒
VCO ㉓
R2044 10
S.I ㉑
C2054 0.1/50
C2058 0.22/50
R2043 3.3K
C2057 0.1/50
C2059 1/50
*D2006
IC2002
ATC ASC
R2051 100K
MONO ⑳
R-CH ⑲
L-CH ⑱
*R2046 1.5K
C2060 0.047
C2061 0.047
C2062 0.1/50
C2065 4.7/25
C2063 3300P
C2064 0.01
*R2047 220K
*R2048 4.7K
VR2003 2.2K SEPA
*C2066 0.015
*R2050 82K
*VR2004 220K BLEND
*R2049 30K
*R2052 75K
R2021 47
R2022 47
C2024 0.047
VD2001
C2020 0.01
C2021 33P
T2001
T2002
R2023 2.2K
CF2004
R2024 3.3K
C2028 0.047
X2001
R2019 100K
R2020 100K
C2022 330P
C2023 0.1
CF2003
R2053 3.3K
C2025 2.2/50
C2026 51P
C2027 10P
R2018 4.7K
L2004
C2030 0.01
R2045 240K
IC2001
R2035 2.2K
D2005
L2008 15μH
R2026 22
L2003
R2027 510
L2006 100μH
C2033 0.022
C2035 0.022
C2039 2.2/50
R2033 9.1K
C2042 22/16
C2044 0.01
S-METER ⑪
L2005 4.7μH
C2029 0.047
C2031 47P
C2034 100P
R2034 2.7K
AF OUT (MW/LW) ⑩
C2043 0.015
R2017 3.9K
C2037 47/25
T2003
Q2003
C2019 0.022
C2036 6800P
D2003
C2038 0.022
C2041 0.01
C2047 100/16
L2002
D2002
Q2004
C2046 2.2/50
450KHz SD OUT (MW/LW) ⑥
D2004
Q2005
R2032 10K
MUTE IN ⑭
D2001
R2030 10K
R2029 10K
+B (MW/LW) ⑨

Note: All resistance values are in ohms. K=1,000
All capacitance values are in microfarads. P=$\frac{1}{1,000,000}$
Parts marked * are for adjustment.

Block Diagram


ANTENNA RECEPTACLE
ANT
FM / MW / LW TUNER (FE 1)
FRONT-END
CERAMIC FILTER
AMP
CERAMIC FILTER
FM IF AMP & DET.
IF DET
NOISE SUPPRESSOR & MPX
FM-L
FM-R
MW /LW
RF AMP
AGC
MW/LW RADIO
FM OSC
VT
L/D
MW/LW OSC
IC101 OSC AMP
Q102, 103 LOW-PASS FILTER
Q101 LO/DX SWITCH
IC102 DTS μ-COM
FM S/D
MW/LW S/D
ST/MONO
SK
DK
IC103 SDK DET.
Q115 DK AMP
IC104 DK DET.
Q116 DK SWITCH
IC205 QUADRUPLE OVERSAMPLING DIGITAL FILTER
IC204 D/A CONVERTER (16-BIT)
IC408, 409 LOW PASS FILTER
L
R
IC201 DIGITAL SIGNAL PROCESSOR
IC407 CD/TUNER SWITCH
IC406 BUFFER AMP
TRE/BASS
IC405 TRE/BASS AMP
BAL VOL
IC401, 403 BUFFER AMP (AUDIO SELECTOR)
Q628, 629 MUTE DRIVER
Q401, 402 MUTE
FADER
FRONT OUTPUT L RCA CONNECTOR
REAR OUTPUT L RCA CONNECTOR
FRONT OUTPUT R RCA CONNECTOR
REAR OUTPUT R RCA CONNECTOR
MAIN POWER CONNECTOR
①
②
③
④
BATT
ACC
IN PAUSE
OUT REMOTE
REGULATOR & BATT VOLTAGE DET.
+5V (FOR CPU)
Q609 ACC DET.
Q633 STAND-BY DET.
Q607 INPUT PAUSE
Q610～615 CURRENT LIMITER/ OUTPUT REMOTE
FL901 FL DISPLAY
IC901, 902 FL DRIVER
KEY IN
IC601 MICRO-COMPUTER
IC607 ALARM OSCILLATOR
IC206, Q202 THERMAL DET.
IC202 SERVO CONTROL
Q204～206 SOLENOID DRIVER
IC606 RESET
S901 RESET SWITCH
IC206, Q201 LASER APC CIRCUIT
IC207 RF AMP
FOCUS SERVO
IC208～211, 214 SERVO DRIVER
CD MECHANISM
OPTICAL PICK-UP BLOCK HD201
LD
PD
B
D
A
C
E
F
M302 SPINDLE MOTOR
M303 SLED MOTOR
TRACKING COIL
FOCUS COIL
SD301 CLAMP SOLENOID
PT301～304 DISC DET. PHOTO SWITCH
IC301 LOADING DRIVER
M301 LOADING MOTOR
S301 CLAMP END SWITCH
S302 LIMIT SWITCH

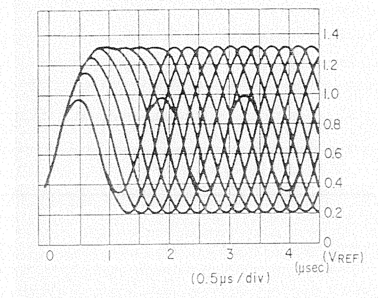
Parts Layout on P.C. Boards and Wiring Diagram (1/2)


1
2
3
4
5
Main P. C. Board
SHLD
GRY
To QRB P.C.Board ET801
To QRB P.C.Board CH1
To QRB P.C.Board CB1
To End Switch P.C.Board
ORG
RED
BRN
To Optical Pick up Unit (HD201)
CB203
CB202
CB201
CB901
CB4
CB3
IC101
IC102
IC103
IC104
IC201
IC202
IC203
IC204
IC205
IC206
IC208
IC209
IC210
IC211
IC213
IC214
IC406
IC601
IC602
IC603
IC605
IC606
IC607
BA601
X101
X102
X601
X201
TH201
L601
L602
L603
S801
S905
VR101
VR201
VR401
VR406
To Load / Photo P.C.Board(1)
To Main Front P.C.Board
①
②
A
B
C
D
E
F
G
H

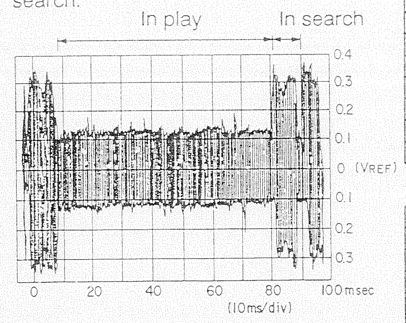
BLU	Blue
GRN	Green
BLK	Black
GRY	Gray
WHT	White
RED	Red
BRN	Brown
ORG	Orange
YEL	Yellow
PNK	Pink
VIO	Violet
GRN/WHT	Green/White
GRY/WHT	Gray/White
GRY/YEL	Gray/Yellow
GRN/YEL	Green/Yellow
SHLD	Shield

	E	C
Q101	0V	6.6V/0V
		LO / DX
Q102	0.1V	1.1V~7.4V
Q103	0.7V	9.4V
Q104	0V	0V
Q105	0V	0V
	FM+B / MW /LW+	
Q106	0V	0V/7.7V
	FM+B / MW /LW+	
Q107	8.8V	8.7V/0V
	FM+B / MW /LW+	
Q108	8.8V	8.8V/1.4V
	FM+B / MW /LW+	
Q109	0V	8.6V/0V
	FM+B / MW /LW+	
Q110	8.8V	14V
Q111	0V/13V	13.9V/0V
	POWER ON / OFF	
Q112	0V	0V/13V
	RADIO ON / OFF	
Q113	8.6V	13.7V
Q115	1V	2.9V
Q116	0V	3.6V
Q117	0.8V	0V
Q118	0.8V	0V
Q201	3.6V	1.9V
Q202	5.2V	0.3V
Q203	0V	2.2V
Q204	13.7V	0V
Q205	0V	13.7V
Q206	0V	0V
Q207	0.1V	8.3V
Q208	0.1V	0.1V
Q209	4.1V	0V
Q210	2.2V/2.2V	2.3V/2.3V
	SPINDLE MOTOR ON	
Q211	2.3V	2.3V
Q401	0V	0V
Q402	0V	0V
Q403	4.1V	4.1V
Q405	4.1V	4.1V

(i) Waveform at RFO terminal (No. 10 pin of IC207,TA8101F), when unit in play.



(ii) Waveform at TSO terminal (No. 22 pin of IC207, TA8101F), when unit in play/ search.



(Measuring Conditions)

1. Power Supply : 14V DC
2. Measuring Tool : Digital Multi Voltmeter
3. Measuring Standard : Ground = 0V
4. Unit Condition : Be playing back the 2nd Music of the test CD(YEDS-18).

IC201

1	PS	11	PS	21	PS	31
2	PS	12	PS	22	0V	32
3	PS	13	PS	23	5V	33
4	PS	14	PS	24	5V	34
5	PS	15	PS	25	PS	35
6	PS	16	PS	26	PS	36
7	PS	17	PS	27	PS	37
8	PS	18	4.8V	28	PS	38
9	PS	19	4.8V	29	PS	39
10	PS	20	0V	30	N.C	40

IC202

1	PS	11	PS	21	2V	31
2	5V	12	PS	22	2.2V	32
3	4.4V	13	2.2V	23	5.1V	33
4	PS	14	2.2V	24	2.2V	34
5	PS	15	2.2V	25	2.2V	35
6	PS	16	2.2V	26	2.2V	36
7	2.5V	17	2.2V	27	2.2V	37
8	1.3V	18	PS	28	PS	38
9	PS	19	0V	29	PS	39
10	1.1V	20	0V	30	2.2V	40

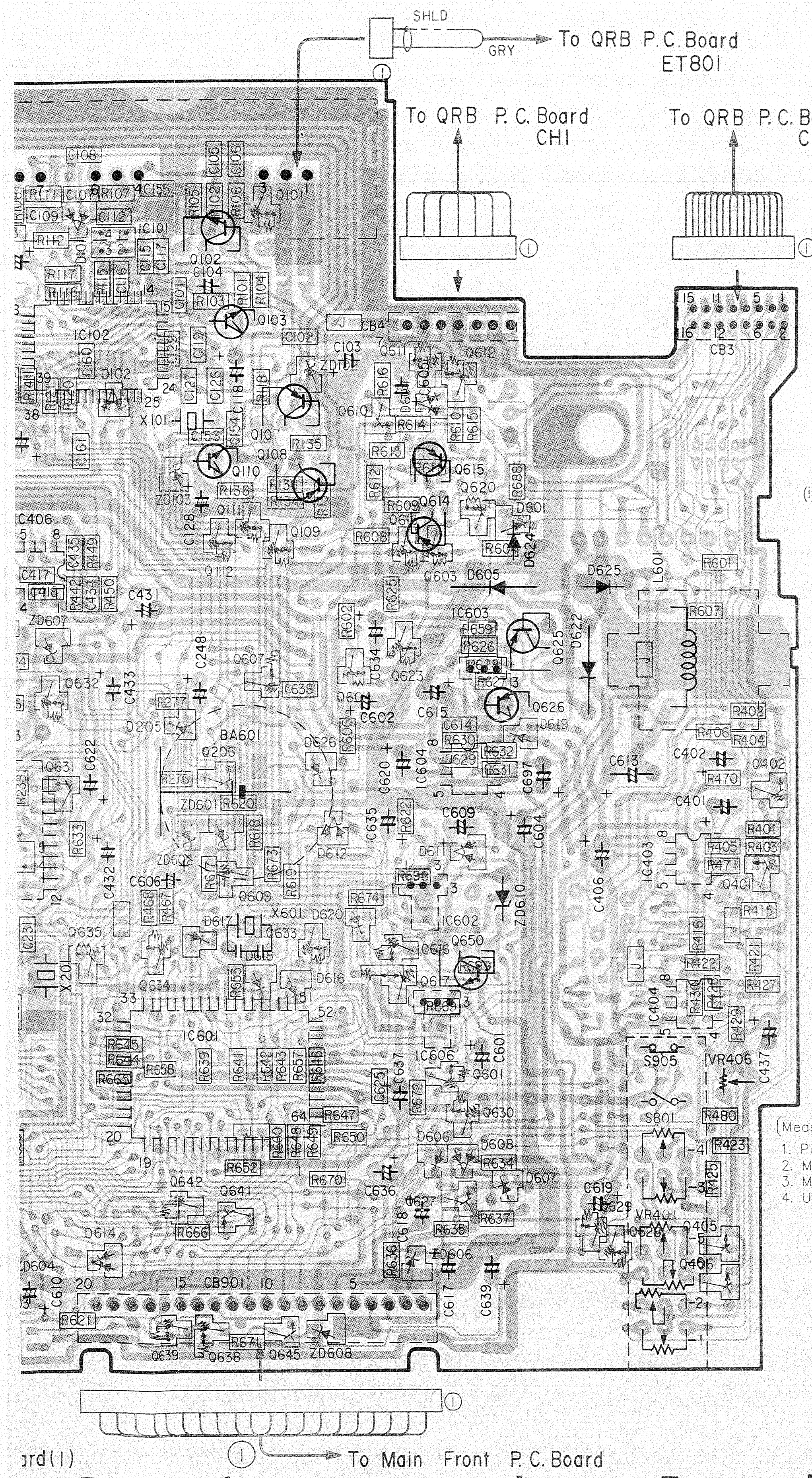
IC206

1	0.6V
2	4V
3	2.5V
4	0V
5	0.2V
6	0.2V
7	2.8V
8	4.7V

IC

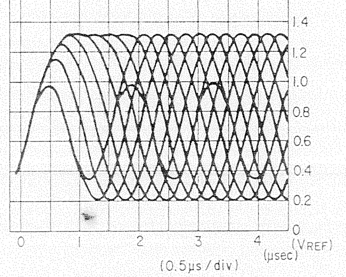
1
2
3
4
5
6
7
8

m (1/2)

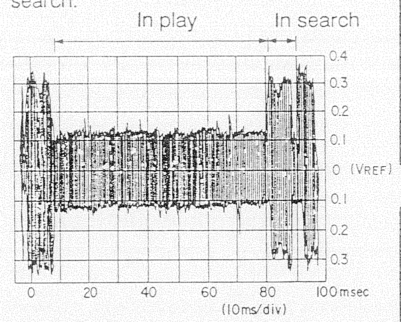


BLU	Blue
GRN	Green
BLK	Black
GRY	Gray
WHT	White
RED	Red
BRN	Brown
ORG	Orange
YEL	Yellow
PNK	Pink
VIO	Violet
GRN/WHT	Green/White
GRY/WHT	Gray/White
GRY/YEL	Gray/Yellow
GRN/YEL	Green/Yellow
SHLD	Shield

(i) Waveform at RFO terminal (No. 10 pin of IC207, TA8101F), when unit in play.



(ii) Waveform at TSO terminal (No. 22 pin of IC207, TA8101F), when unit in play/search.



(Measuring Conditions)

1. Power Supply : 14V DC
2. Measuring Tool : Digital Multi Voltmeter
3. Measuring Standard : Ground = 0V
4. Unit Condition : Be playing back the 2nd Music of the test CD(YEDS-18).

	E	C	B		E	C	B
Q101	0V	6.6V/0V	4.7V/0V	Q601	0V/0V	4.8V/0V	0V/8.1V
	LO / DX				DIMMER ON/OFF		
Q102	0.1V	1.1V~7.4V	0.7V	Q603	0V	0V	3.9V
Q103	0.7V	9.4V	1.1V	Q604	0V	7.8V	0V
Q104	0V	0V	0.7V	Q607	0V/0V	4.7V/0V	0V/14.4V
Q105	0V	0V	6.7V/0V		IN PAUSE ON/OFF		
	FM+B / MW /LW+B			Q609	14.2V	14.2V	7.3V
Q106	0V	0V/7.7V	0V/4.7V	Q610	14V	14V	13.3V
	FM+B / MW /LW+B			Q611	0V	0V	10V
Q107	8.8V	8.7V/0V	8.8V/8.1V	Q612	0V	0V	9.7V
	FM+B / MW /LW+B			Q613	0V	0.1V	4.3V
Q108	8.8V	8.8V/1.4V	8.6V/8.1V	Q614	14V	14V	13.3V
	FM+B / MW /LW+B			Q615	14V	14V	13.4V
Q109	0V	8.6V/0V	4.4V/1V	Q616	0V	0V	4.5V
	FM+B / MW /LW+B			Q617	5.1V	4.9V	0V
Q110	8.8V	14V	9.4V	Q618	0V	4V	0V
Q111	0V/13V	13.9V/0V	0V/14V	Q619	7.6V	14V	8.2V
	POWER ON / OFF			Q620	13.8V	0V	13.7V
Q112	0V	0V/13V	5.1V/0V	Q621	0V	0V	3.9V
	RADIO ON / OFF			Q622	5.1V	8.3V	5.7V
Q113	8.6V	13.7V	9.2V	Q623	0V	0.4V	3.3V
Q115	1V	2.9V	1.6V	Q625	14.1V	14.1V	13.4V
Q116	0V	3.6V	0.6V	Q626	14.1V	8.7V	13.5V
Q117	0.8V	0V	0.1V	Q627	10V	0.3V	10V
Q118	0.8V	0V	0.1V	Q628	14V	0.3V	14V
Q201	3.6V	1.9V	3V	Q629	0V	14V	0V
Q202	5.2V	0.3V	5.1V	Q630	0V	0V	4.3V
Q203	0V	2.2V	0V	Q631	2.4V	8.7V	3V
Q204	13.7V	0V	13.1V	Q632	3V	0V	0V
Q205	0V	13.7V	0V	Q633	5.7V	4.5V	5.7V
Q206	0V	0V	0.2V	Q634	0V	8.7V	0V
Q207	0.1V	8.3V	4.7V	Q635	0V/0V	0V/7.8V	3.9V/0V
Q208	0.1V	0.1V	0.1V		SDK ON / OFF		
Q209	4.1V	0V	3.5V	Q636	13.8V	0.1V	13.7V
Q210	2.2V/2.2V	2.3V/2.3V	4.8V/0V	Q637	13.9V	0V	13.9V
	SPINDLE MOTOR ON / OFF			Q638	14V	13.1V	0V
Q211	2.3V	2.3V	5V	Q639	0V	0V	5V
Q401	0V	0V	0.2V	Q642	0V	0.2V	2.2V
Q402	0V	0V	0.2V	Q645	12.2V	13.3V	12.9V
Q403	4.1V	4.1V	4.8V	Q646	0V	0V	3.3V
Q405	4.1V	4.1V	4.8V	Q647	5.5V	5V	0V
				Q650	5.5V	13.8V	6V

IC201

1	PS	11	PS	21	PS	31	N.C	41	PS	51	4.9V
2	PS	12	PS	22	0V	32	PS	42	PS	52	4.9V
3	PS	13	PS	23	5V	33	PS	43	PS	53	5V
4	PS	14	PS	24	5V	34	PS	44	PS	54	0V
5	PS	15	PS	25	PS	35	PS	45	PS	55	4.9V
6	PS	16	PS	26	PS	36	N.C	46	N.C	56	PS
7	PS	17	PS	27	PS	37	N.C	47	3.3V	57	PS
8	PS	18	4.8V	28	PS	38	PS	48	2.3V	58	PS
9	PS	19	4.8V	29	PS	39	PS	49	4.8V	59	PS
10	PS	20	0V	30	N.C	40	PS	50	4.8V	60	4.9V

IC202

1	PS	11	PS	21	2V	31	2.2V	41	0V	51	PS
2	5V	12	PS	22	2.2V	32	2.2V	42	PS	52	5V
3	4.4V	13	2.2V	23	5.1V	33	1.7V	43	PS	53	5V
4	PS	14	2.2V	24	2.2V	34	4.5V	44	2.4V	54	0V
5	PS	15	2.2V	25	2.2V	35	0V	45	4.9V	55	PS
6	PS	16	2.2V	26	2.2V	36	PS	46	4.9V	56	PS
7	2.5V	17	2.2V	27	2.2V	37	PS	47	PS	57	PS
8	1.3V	18	PS	28	PS	38	PS	48	PS	58	PS
9	PS	19	0V	29	PS	39	PS	49	PS	59	PS
10	1.1V	20	0V	30	2.2V	40	0V	50	PS	60	PS

IC203

1	PS	13	PS
2	PS	14	PS
3	PS	15	PS
4	PS	16	PS
5	PS	17	PS
6	PS	18	0V
7	PS	19	PS
8	PS	20	PS
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	PS	24	5.1V

IC204

1	4.7V	9	2V
2	0V	10	2V
3	4.7V	11	1.5V
4	4.7V	12	0V
5	0V	13	PS
6	1.5V	14	PS
7	4.7V	15	PS
8	4.7V	16	PS

IC206

1	0.6V
2	4V
3	2.5V
4	0V
5	0.2V
6	0.2V
7	2.8V
8	4.7V

IC208

1	PS
2	PS
3	PS
4	0.1V
5	2.1V
6	2.1V
7	2.4V
8	5.1V

IC209

1	PS
2	PS
3	PS
4	0V
5	4.1V
6	4.1V
7	PS
8	8.3V

IC213

1	0V
2	PS
3	0V
4	PS
5	5V

IC214

1	PS
2	PS
3	2.2V
4	0V
5	2.2V
6	2.2V
7	PS
8	5.1V

IC604

1	8.2V
2	0.4V
3	2.4V
4	0V
5	4.3V
6	4.4V
7	4.4V
8	8.7V

IC605

1	PS
2	0V
3	PS
4	0V
5	1.3V
6	13.9V
7	13.9V
8	PS

IC607

1	–
2	–
3	–
4	0V
5	4.4V
6	4.4V
7	4.4V
8	4.9V

IC101

1	0V
2	3.7V
3	1.5V
4	1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	3.6V
20	PS	44	0.6V
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC205

1	0V	13	4.6V
2	5V	14	PS
3	2.5V	15	PS
4	2.4V	16	PS
5	N.C	17	N.C
6	5V	18	N.C
7	N.C	19	0V
8	N.C	20	N.C
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	5V	24	0V

IC207

1	2V	11	2.2V	21	2.2V
2	2V	12	2.2V	22	2.2V
3	2.2V	13	2.2V	23	2.2V
4	2V	14	0V	24	2.2V
5	2V	15	PS	25	2.2V
6	2V	16	1V	26	2.8V
7	2V	17	PS	27	2.2V
8	5V	18	1V	28	2.2V
9	2V	19	PS	29	2.2V
10	2V	20	2.5V	30	2.2V

IC410

1	0V
2	PS
3	0V
4	PS
5	5V

IC210

1	0V	9	0V
2	0V	10	0V
3	PS	11	4.1V
4	8.3V	12	4.1V
5	PS	13	4.1V
6	0V	14	4.1V
7	0V	15	0V
8	0V	16	0V

IC211

1	0V	9	0V
2	0V	10	0V
3	3.6V	11	4.1V
4	8.3V	12	4.1V
5	PS	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC602

1	4.8V
2	0V
3	4.7V

IC603

1	13.5V
2	0V
3	1.3V

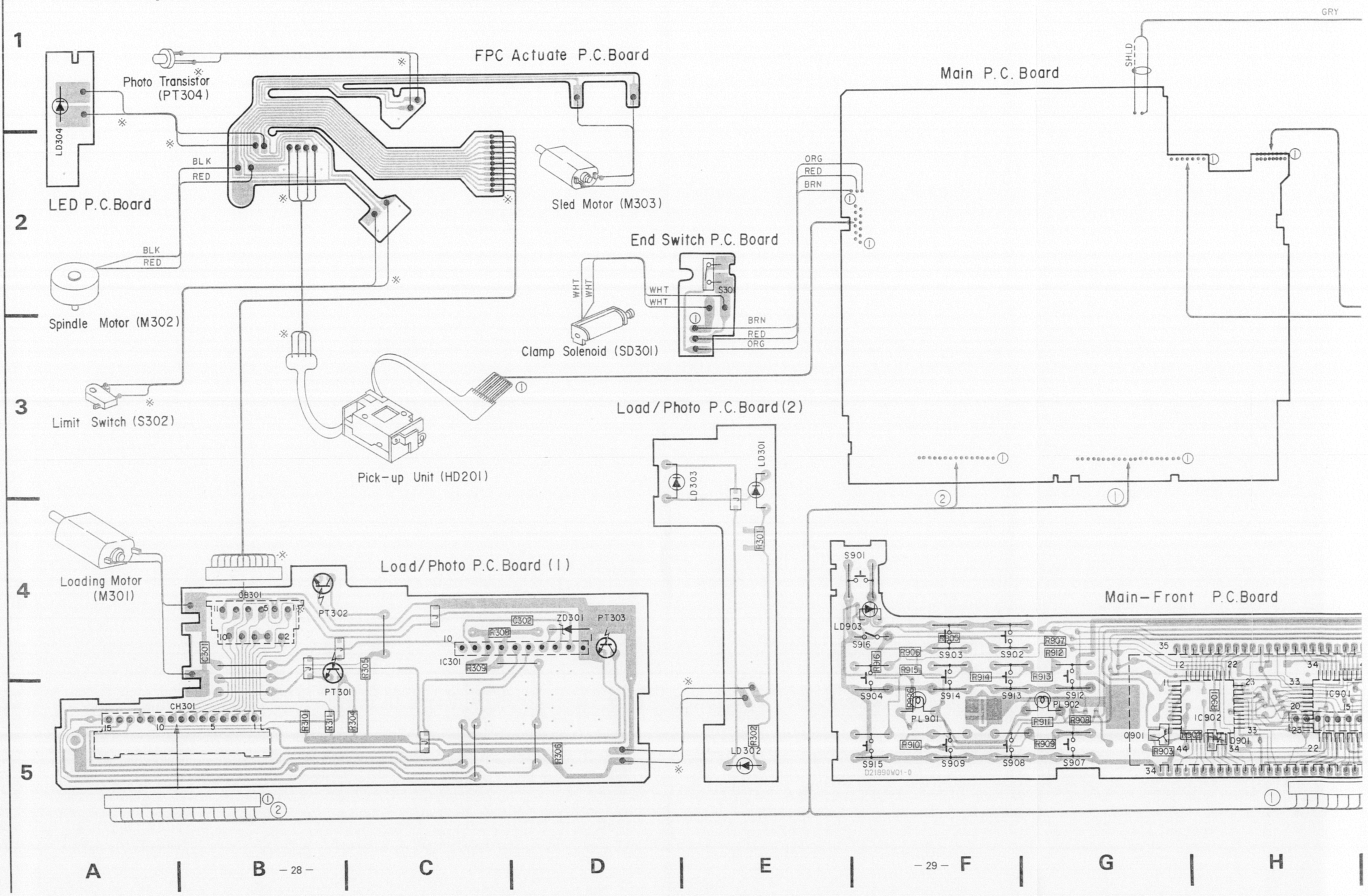
IC606

1	4.6V
2	4.7V
3	0V

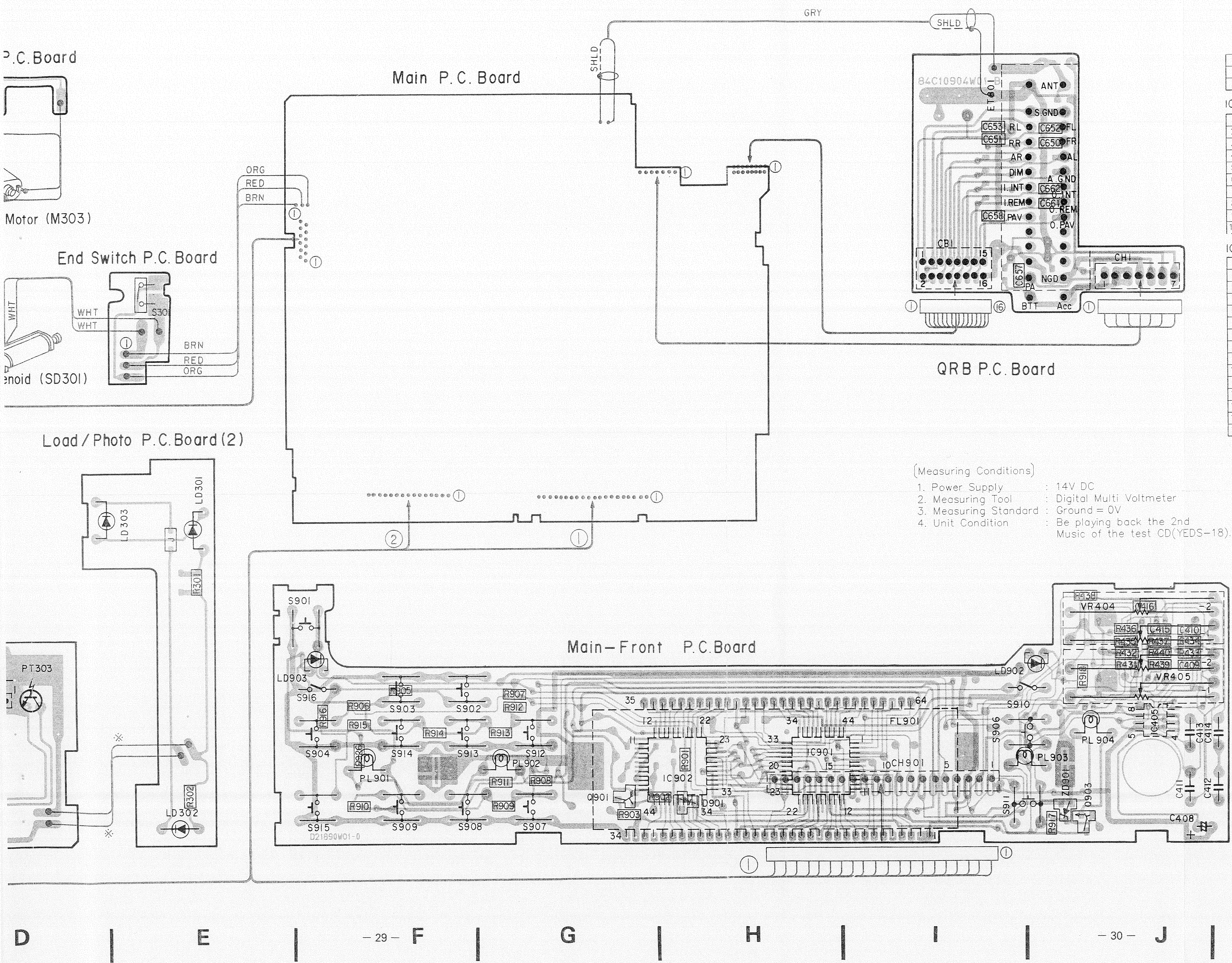
IC601

1	0V/5V	23	2.7V	45	2.2V
2	0V/5V	24	0V	46	4.6V
3	0V/5V	25	0V	47	0.6V
4	0V/5V	26	0V	48	4.2V
5	PS	27	0V	49	4.8V
6	PS	28	0V	50	4.7V
7	PS	29	4.7V	51	0.3V
8	PS	30	3.3V	52	0V
9	PS	31	0V	53	3.6V
10	4.7V	32	4V	54	0V
11	0.1V	33	4V	55	4V
12	4.2V	34	1.2V	56	4V
13	PS	35	4.7V	57	4V
14	PS	36	4.7V	58	4.7V
15	PS	37	0V	59	4.6V
16	4.8V	38	4.7V	60	0V
17	0V	39	4.2V	61	0V
18	0V	40	4.2V	62	4.5V
19	0V	41	5V	63	4.5V
20	0V	42	0.5V	64	4.5V
21	0V	43	4.6V		
22	3.3V	44	1.1V		

Parts Layout on P.C. Boards and Wiring Diagram (2/2)


FPC Actuate P.C.Board
Photo Transistor (PT304)
LED P.C.Board
LD304
BLK
RED
Sled Motor (M303)
Spindle Motor (M302)
Limit Switch (S302)
Pick-up Unit (HD201)
End Switch P.C.Board
S301
WHT
BRN
ORG
Clamp Solenoid (SD301)
Main P.C.Board
SHLD
GRY
Load/Photo P.C.Board (2)
LD303
LD301
LD302
R301
R302
J
Loading Motor (M301)
Load/Photo P.C.Board (1)
CB301
PT302
PT303
PT301
ZD301
IC301
C301
C302
R305
R308
R309
R310
R311
R304
R306
CH301
Main-Front P.C.Board
S901
LD903
S916
R916
R906
R915
S903
S902
S904
S914
S913
S912
R905
R907
R912
R914
R913
PL901
PL902
R911
R908
R910
R909
S915
S909
S908
S907
IC902
IC901
Q901
R902
R903
D901
D21890W01-0
①
②
※
1
2
3
4
5
A
B
C
D
E
F
G
H

2/2)


P.C.Board
Motor (M303)
End Switch P.C.Board
S301
WHT
WHT
BRN
RED
ORG
enoid (SD301)
Load / Photo P.C.Board (2)
LD301
LD303
R301
R302
LD302
PT303
Main P.C.Board
ORG
RED
BRN
GRY
SHLD
SHLD
QRB P.C.Board
84C10904W01-B
ET801
ANT
S.GND
RL
RR
AR
DIM
I.INT
I.REM
PAV
FL
FR
AL
A.GND
O.INT
O.REM
O.PAV
C653
C651
C652
C650
C562
C661
C658
C657
CB1
CH1
NGD
PA
BTT
Acc
Main-Front P.C.Board
S901
LD903
S916
R916
R906
R915
S903
R905
S902
R907
R912
S904
S914
R914
S913
R913
S912
PL901
R926
PL902
R911
R908
S915
R910
S909
S908
R909
S907
D21890W01-0
Q901
R903
R904
D901
IC902
R901
IC901
CH901
FL901
LD902
S910
S906
PL903
PL904
S911
R917
ZD901
Q903
R918
R438
VR404
R416
R436
C415
C410
R435
R437
R434
R432
R440
R433
R431
R439
C409
VR405
IC405
C413
C414
C411
C412
C408
D
E
F
G
H
I
J
K

	E	C	B
Q901	0.7V	2V	1.4V
Q903	6.1V	7.4V	6.7V

IC301

1	0V
2	0V/6V
3	8V/0V
4	6V/0V
5	2V/0V
6	2V/0V
7	10V/0V
8	10V/0V
9	8V/0V
10	0V/6V

IC405

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC901, IC902

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

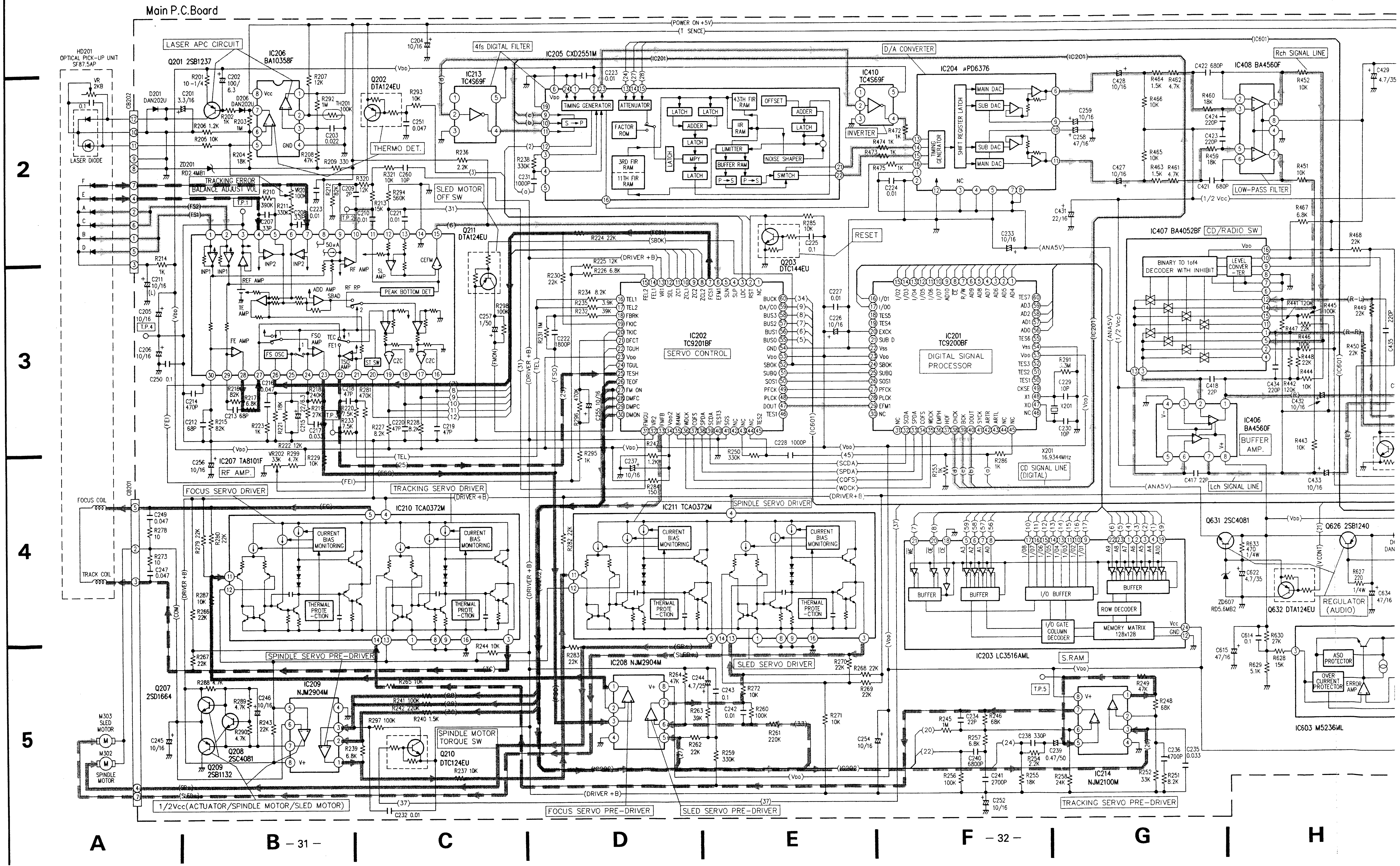
(Measuring Conditions)

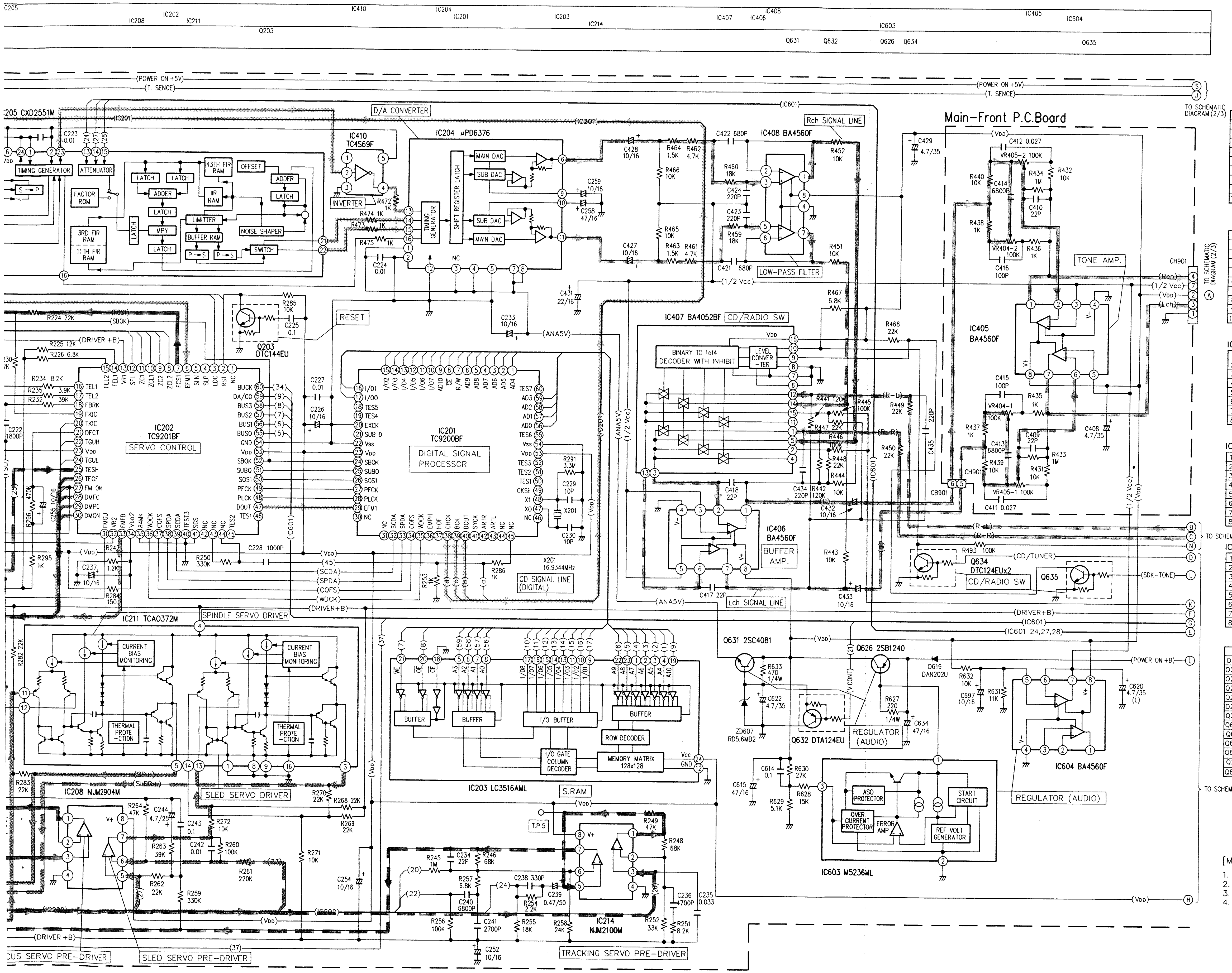
1. Power Supply	:	14V DC
2. Measuring Tool	:	Digital Multi Voltmeter
3. Measuring Standard	:	Ground = 0V
4. Unit Condition	:	Be playing back the 2nd Music of the test CD(YEDS-18).

BLU	Blue
GRN	Green
BLK	Black
GRY	Gray
WHT	White
RED	Red
BRN	Brown
ORG	Orange
YEL	Yellow
PNK	Pink
VIO	Violet
GRN/WHT	Green/White
GRY/WHT	Gray/White
GRY/YEL	Gray/Yellow
GRN/YEL	Green/Yellow
SHLD	Shield

Schematic Diagram (1/3)

IC	IC206 IC207 IC209 IC210 IC213 IC205 IC208 IC202 IC211 IC410 IC204 IC201 IC203 IC214 IC407 IC406 IC408 IC603
Transistor (Q)	Q201 Q207 Q209 Q208 Q202 Q210 Q211 Q203 Q631 Q632 Q626 Q634


Main P.C.Board
HD201 OPTICAL PICK-UP UNIT SF87.5AP
LASER DIODE
VR 2KB
CB202
CB201
LASER APC CIRCUIT
Q201 2SB1237
IC206 BA10358F
Q202 DTA124EU
THERMO DET.
TRACKING ERROR BALANCE ADJUST VOL
IC207 TA8101F
RF AMP.
SLED MOTOR OFF SW
Q211 DTA124EU
4fs DIGITAL FILTER
IC213 TC4S69F
IC205 CXD2551M
TIMING GENERATOR
ATTENUATOR
FACTOR ROM
3RD FIR RAM
11TH FIR RAM
LATCH
ADDER
MPY
43TH FIR RAM
IIR RAM
LIMITTER
BUFFER RAM
OFFSET
NOISE SHAPER
SWITCH
D/A CONVERTER
IC410 TC4S69F
INVERTER
IC204 μPD6376
TIMING GENERATOR
SHIFT REGISTER LATCH
MAIN DAC
SUB DAC
IC408 BA4560F
Rch SIGNAL LINE
LOW-PASS FILTER
(POWER ON +5V)
(T SENCE)
RESET
Q203 DTC144EU
IC202 TC9201BF
SERVO CONTROL
IC201 TC9200BF
DIGITAL SIGNAL PROCESSOR
X201 16.9344MHz
CD SIGNAL LINE (DIGITAL)
IC407 BA4052BF
CD/RADIO SW
BINARY TO 1of4 DECODER WITH INHIBIT
LEVEL CONVER-TER
IC406 BA4560F
BUFFER AMP.
Lch SIGNAL LINE
FOCUS COIL
TRACK COIL
FOCUS SERVO DRIVER
TRACKING SERVO DRIVER
IC210 TCA0372M
CURRENT BIAS MONITORING
THERMAL PROTE-CTION
IC211 TCA0372M
SPINDLE SERVO DRIVER
SLED SERVO DRIVER
SPINDLE SERVO PRE-DRIVER
Q207 2SD1664
Q208 2SC4081
Q209 2SB1132
IC209 NJM2904M
SPINDLE MOTOR TORQUE SW
Q210 DTC124EU
IC208 NJM2904M
M303 SLED MOTOR
M302 SPINDLE MOTOR
1/2Vcc(ACTUATOR/SPINDLE MOTOR/SLED MOTOR)
FOCUS SERVO PRE-DRIVER
SLED SERVO PRE-DRIVER
IC203 LC3516AML
BUFFER
I/O BUFFER
ROW DECODER
I/O GATE COLUMN DECODER
MEMORY MATRIX 128x128
S.RAM
IC214 NJM2100M
TRACKING SERVO PRE-DRIVER
T.P.5
Q631 2SC4081
ZD607 RD5.6MB2
Q632 DTA124EU
Q626 2SB1240
REGULATOR (AUDIO)
IC603 M5236ML
ASO PROTECTOR
OVER CURRENT PROTECTOR
ERROR AMP
1
2
3
4
5
A
B
C
D
E
F
G
H


(POWER ON +5V)
(T. SENCE)
TO SCHEMATIC DIAGRAM (2/3)
TO SCHEMATIC DIAGRAM (3/3)
IC205 CXD2551M
TIMING GENERATOR
ATTENUATOR
D/A CONVERTER
IC410 TC4S69F
INVERTER
IC204 µPD6376
TIMING GENERATOR
SHIFT REGISTER LATCH
MAIN DAC
SUB DAC
IC408 BA4560F
Rch SIGNAL LINE
LOW-PASS FILTER
Main-Front P.C.Board
TONE AMP.
IC405 BA4560F
CH901
RESET
Q203 DTC144EU
IC202 TC9201BF
SERVO CONTROL
IC201 TC9200BF
DIGITAL SIGNAL PROCESSOR
X201 16.9344MHz
CD SIGNAL LINE (DIGITAL)
IC407 BA4052BF
CD/RADIO SW
BINARY TO 1of4 DECODER WITH INHIBIT
LEVEL CONVER-TER
IC406 BA4560F
BUFFER AMP.
Lch SIGNAL LINE
Q634 DTC124EUx2
CD/RADIO SW
Q635
IC211 TCA0372M
SPINDLE SERVO DRIVER
CURRENT BIAS MONITORING
THERMAL PROTE-CTION
SLED SERVO DRIVER
IC203 LC3516AML
S.RAM
BUFFER
I/O BUFFER
ROW DECODER
I/O GATE COLUMN DECODER
MEMORY MATRIX 128x128
Q631 2SC4081
Q626 2SB1240
D619 DAN202U
ZD607 RD5.6MB2
Q632 DTA124EU
REGULATOR (AUDIO)
IC603 M5236ML
ASO PROTECTOR
OVER CURRENT PROTECTOR
ERROR AMP
START CIRCUIT
REF VOLT GENERATOR
IC604 BA4560F
IC208 NJM2904M
IC214 NJM2100M
TRACKING SERVO PRE-DRIVER
SLED SERVO PRE-DRIVER
FOCUS SERVO PRE-DRIVER
T.P.5

D | E | F | G | H | I | J | K

IC201

1	PS	11	PS	21	PS	31		41	PS	51	4.9V
2	PS	12	PS	22	0V	32	PS	42	PS	52	4.9V
3	PS	13	PS	23	5V	33	PS	43	PS	53	5V
4	PS	14	PS	24	5V	34	PS	44	PS	54	0V
5	PS	15	PS	25	PS	35	PS	45	PS	55	4.9V
6	PS	16	PS	26	PS	36		46		56	PS
7	PS	17	PS	27	PS	37		47	3.3V	57	PS
8	PS	18	4.8V	28	PS	38	PS	48	2.3V	58	PS
9	PS	19	4.8V	29	PS	39	PS	49	4.8V	59	PS
10	PS	20	0V	30		40	PS	50	4.8V	60	4.9V

IC203

1	PS	13	PS
2	PS	14	PS
3	PS	15	PS
4	PS	16	PS
5	PS	17	PS
6	PS	18	0V
7	PS	19	PS
8	PS	20	PS
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	PS	24	5.1V

IC202

1	PS	11	PS	21	2V	31	2.2V	41	0V	51	PS
2	5V	12	PS	22	2.2V	32	2.2V	42	PS	52	5V
3	4.4V	13	2.2V	23	5.1V	33	1.7V	43	PS	53	5V
4	PS	14	2.2V	24	2.2V	34	4.5V	44	2.4V	54	0V
5	PS	15	2.2V	25	2.2V	35	0V	45	4.9V	55	PS
6	PS	16	2.2V	26	2.2V	36	PS	46	4.9V	56	PS
7	2.5V	17	2.2V	27	2.2V	37	PS	47	PS	57	PS
8	1.3V	18	PS	28	PS	38	PS	48	PS	58	PS
9	PS	19	0V	29	PS	39	PS	49	PS	59	PS
10	1.1V	20	0V	30	2.2V	40	0V	50	PS	60	PS

IC204

1	4.7V	9	2V
2	0V	10	2V
3	4.7V	11	1.5V
4	4.7V	12	0V
5	0V	13	PS
6	1.5V	14	PS
7	4.7V	15	PS
8	4.7V	16	PS

IC206

1	0.6V
2	4V
3	2.5V
4	0V
5	0.2V
6	0.2V
7	2.8V
8	4.7V

IC207

1	2V	11	2.2V	21	2.2V
2	2V	12	2.2V	22	2.2V
3	2.2V	13	2.2V	23	2.2V
4	2V	14	0V	24	2.2V
5	2V	15	PS	25	2.2V
6	2V	16	1V	26	2.8V
7	2V	17	PS	27	2.2V
8	5V	18	1V	28	2.2V
9	2V	19	PS	29	2.2V
10	2V	20	2.5V	30	2.2V

IC208

1	PS
2	PS
3	PS
4	0.1V
5	2.1V
6	2.1V
7	2.4V
8	5.1V

IC213

1	0V
2	PS
3	0V
4	PS
5	5V

IC205

1	0V	13	4.6V
2	5V	14	PS
3	2.5V	15	PS
4	2.4V	16	PS
5		17	
6	5V	18	
7		19	0V
8		20	
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	5V	24	0V

IC209

1	PS
2	PS
3	PS
4	0V
5	4.1V
6	4.1V
7	PS
8	8.3V

IC210

1	0V	9	0V
2	0V	10	0V
3	PS	11	4.1V
4	8.3V	12	4.1V
5	PS	13	4.1V
6	0V	14	4.1V
7	0V	15	0V
8	0V	16	0V

IC211

1	0V	9	0V
2	0V	10	0V
3	3.6V	11	4.1V
4	8.3V	12	4.1V
5	PS	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC214

1	PS
2	PS
3	2.2V
4	0V
5	2.2V
6	2.2V
7	PS
8	5.1V

IC405

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC410

1	0V
2	PS
3	0V
4	PS
5	5V

IC603

1	13.5V
2	0V
3	1.3V

IC604

1	8.2V
2	0.4V
3	2.4V
4	0V
5	4.3V
6	4.4V
7	4.4V
8	8.7V

	E	C	B	MODE
Q201	3.6V	1.9V	3V	
Q202	5.2V	0.3V	5.1V	
Q203	0V	2.2V	0V	
Q207	4.1V	8.3V	4.7V	
Q208	0.1V	0.1V	0.1V	
Q209	4.1V	0V	3.5V	
Q210	2.2V/2.2V	2.3V/2.3V	4.8V/0V	SPINDLE MOTOR ON/OFF
Q626	14.1V	8.7V	13.5V	
Q631	2.4V	8.7V	3V	
Q632	3V	0V	0V	
Q634	0V	8.7V	0V	
Q211	2.3V	2.3V	5V	
Q635	0V/0V	0V/7.8V	3.9V/0V	SDK ON/OFF

TO SCHEMATIC DIAGRAM (2/3)

▨	CD signal line (Digital)
▨	L-ch signal line
▨	R-ch signal line
▬	Focus servo signal line
▬	Tracking servo signal line
▨	Spindle servo signal line
▨	Sled servo signal line

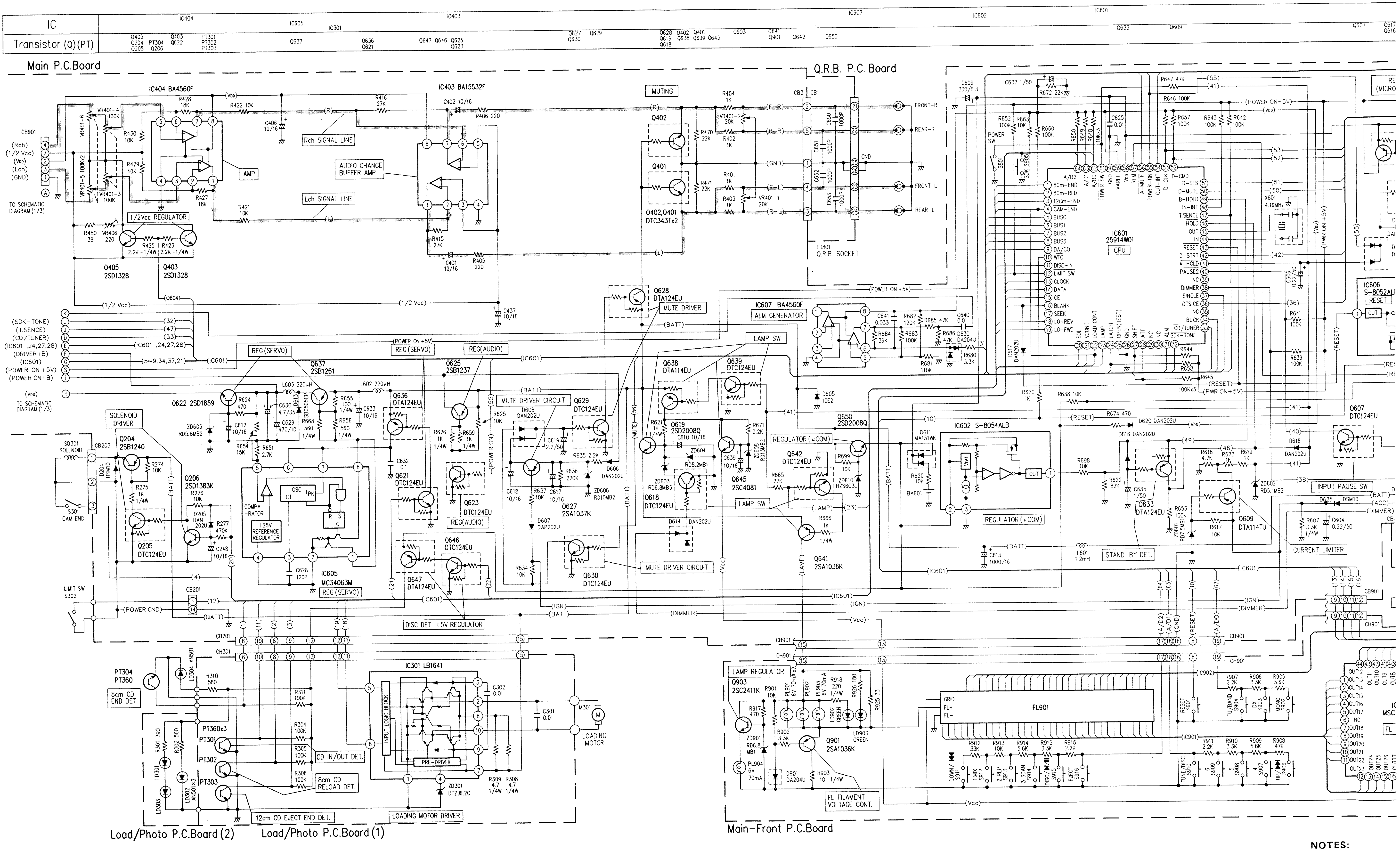
[Measuring Conditions]

1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd. Music of the test CD(YEDS-18).

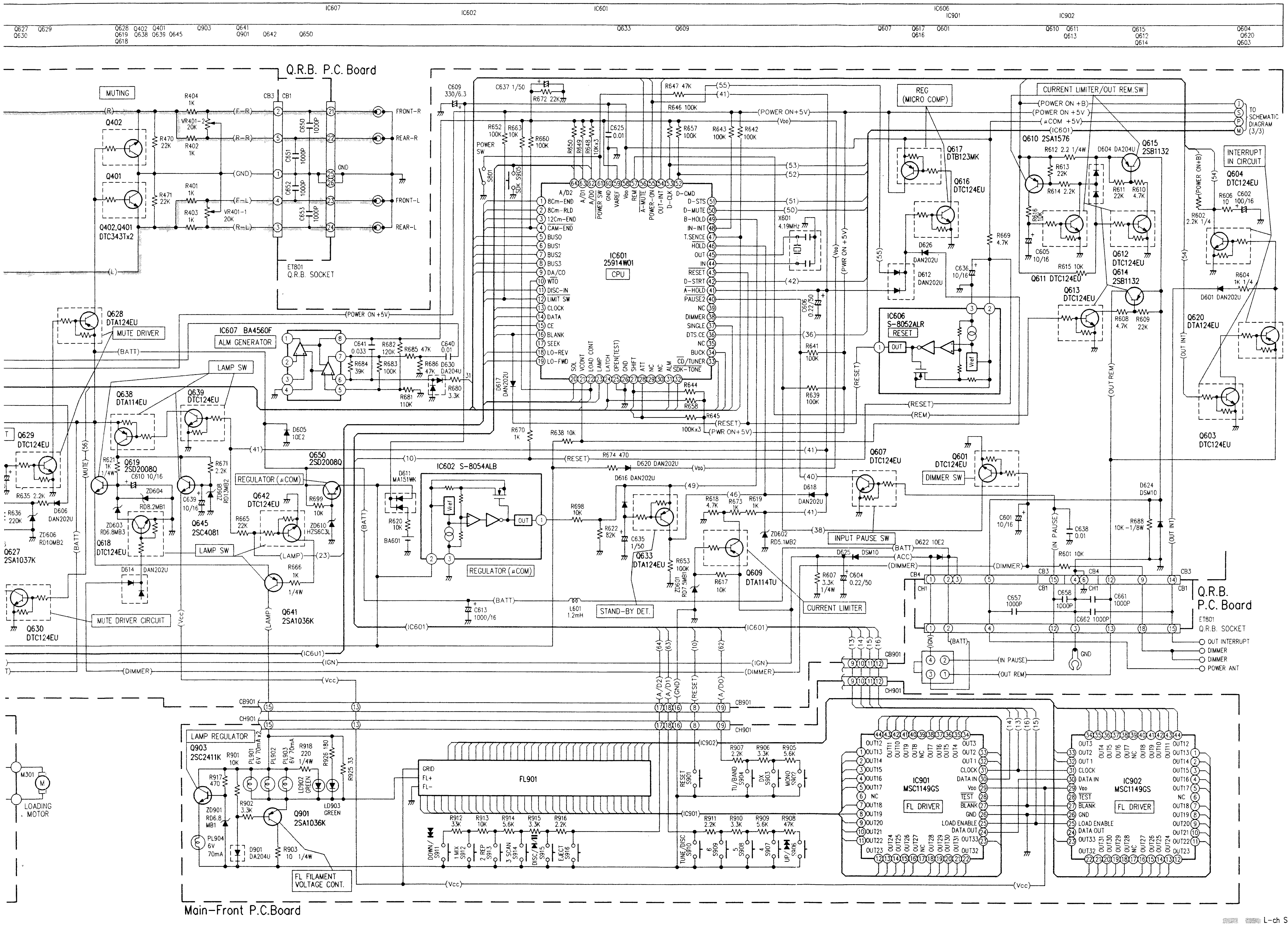
NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

Schematic Diagram (2/3)


IC
Transistor (Q)(PT)
Main P.C.Board
Q.R.B. P.C. Board
IC404 BA4560F
IC403 BA15532F
Rch SIGNAL LINE
Lch SIGNAL LINE
AUDIO CHANGE BUFFER AMP
AMP
1/2Vcc REGULATOR
Q405 2SD1328
Q403 2SD1328
MUTING
Q402
Q401
Q402,Q401 DTC343Tx2
FRONT-R
REAR-R
FRONT-L
REAR-L
ET801 Q.R.B. SOCKET
IC601 25914W01
CPU
CB901
(Rch)
(1/2 Vcc)
(Vcc)
(Lch)
(GND)
TO SCHEMATIC DIAGRAM (1/3)
Q628 DTA124EU
MUTE DRIVER
IC607 BA4560F
ALM GENERATOR
LAMP SW
REG(SERVO)
REG(AUDIO)
Q637 2SB1261
Q622 2SD1859
Q625 2SB1237
Q636 DTA124EU
Q621 DTC124EU
Q623 DTC124EU
MUTE DRIVER CIRCUIT
Q629 DTC124EU
Q627 2SA1037K
Q630 DTC124EU
Q638 DTA114EU
Q639 DTC124EU
Q619 2SD2008Q
Q618 DTC124EU
Q645 2SC4081
Q650 2SD2008Q
REGULATOR (µCOM)
Q642 DTC124EU
Q641 2SA1036K
IC602 S-8054ALB
STAND-BY DET.
Q633 DTA124EU
Q609 DTA114TU
Q607 DTC124EU
INPUT PAUSE SW
CURRENT LIMITER
IC606 S-8052ALI
RESET
SOLENOID DRIVER
Q204 2SB1240
Q205 DTC124EU
Q206 2SD1383K
SD301 SOLENOID
S301 CAM END
LIMIT SW S302
COMPA-RATOR
1.25V REFERENCE REGULATOR
IC605 MC34063M
Q646 DTC124EU
Q647 DTA124EU
DISC DET. +5V REGULATOR
PT304 PT360
8cm CD END DET.
PT360x3
PT301
PT302
PT303
IC301 LB1641
INPUT LOGIC BLOCK
PRE-DRIVER
CD IN/OUT DET.
8cm CD RELOAD DET.
12cm CD EJECT END DET.
LOADING MOTOR DRIVER
M301 LOADING MOTOR
Load/Photo P.C.Board (2)
Load/Photo P.C.Board (1)
LAMP REGULATOR
Q903 2SC2411K
Q901 2SA1036K
FL FILAMENT VOLTAGE CONT.
FL901
Main-Front P.C.Board
1
2
3
4
5
A
B
C
D
E
F
G
H

NOTES:
1. All resistance va
2. All capacitance


IC607
IC602
IC601
IC606
IC901
IC902
Q.R.B. P.C. Board
Main-Front P.C.Board
MUTING
Q402,Q401 DTC343Tx2
Q628 DTA124EU
MUTE DRIVER
IC607 BA4560F
ALM GENERATOR
LAMP SW
IC601 25914W01 CPU
X601 4.19MHz
REG (MICRO COMP)
IC606 S-8052ALR RESET
CURRENT LIMITER/OUT REM.SW
TO SCHEMATIC DIAGRAM (3/3)
INTERRUPT IN CIRCUIT
IC602 S-8054ALB
REGULATOR (µCOM)
STAND-BY DET.
INPUT PAUSE SW
DIMMER SW
CURRENT LIMITER
MUTE DRIVER CIRCUIT
ET801 Q.R.B. SOCKET
LAMP REGULATOR
FL901
FL FILAMENT VOLTAGE CONT.
IC901 MSC1149GS FL DRIVER
IC902 MSC1149GS FL DRIVER
M301 LOADING MOTOR
OUT INTERRUPT
DIMMER
POWER ANT

L-ch Signal Line

R-ch Signal Line

	E	C	B		E	C	B
Q636	13.8V	0.1V	13.7V	Q629	0V	14V	0V
Q637	13.9V	0V	13.9V	Q630	0V	0V	4.3V
Q638	14V	13.1V	0V	Q633	5.7V	4.5V	5.7V
Q639	0V	0V	5V				
Q628	14V	0.3V	14V				
Q642	0V	0.2V	2.2V				
Q645	12.2V	13.3V	12.9V				
Q601	0V/0V	4.8V/0V	0V/8.1V				
	DIMMER ON/OFF						
				Q401	0V	0V	0.2V
Q607	0V/0V	4.7V/0V	0V/14.4V	Q402	0V	0V	0.2V
	IN PAUSE ON/OFF						
Q609	14.2V	14.2V	7.3V	Q901	0.7V	2V	1.4V
Q610	14V	14V	13.3V	Q903	6.1V	7.4V	6.7V
Q611	0V	0V	10V	Q204	13.7V	0V	13.1V
Q612	0V	0V	9.7V	Q205	0V	13.7V	0V
Q613	0V	0.1V	4.3V	Q206	0V	0V	0.2V
Q614	14V	14V	13.3V				
Q615	14V	14V	13.4V				
Q616	0V	0V	4.5V	Q647	5.5V	5V	0V
Q617	5.1V	4.9V	0V	Q403	4.1V	4.1V	4.8V
Q618	0V	4V	0V	Q405	4.1V	4.1V	4.8V
Q619	7.6V	14V	8.2V	Q603	0V	0V	3.9V
Q621	0V	0V	3.9V	Q604	0V	7.8V	0V
Q622	5.1V	8.3V	5.7V	Q620	13.8V	0V	13.7V
Q623	0V	0.4V	3.3V	Q646	0V	0V	3.3V
Q625	14.1V	14.1V	13.4V	Q650	5.5V	13.8V	6V
Q627	10V	0.3V	10V				

IC301

1	0V
2	0V/6V
3	8V/0V
4	6V/0V
5	2V/0V
6	2V/0V
7	10V/0V
8	10V/0V
9	8V/0V
10	0V/6V

IC901

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

IC607

1	–
2	–
3	–
4	0V
5	4.4V
6	4.4V
7	4.4V
8	4.9V

IC602

1	4.8V
2	0V
3	4.7V

IC902

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC606

1	4.6V
2	4.7V
3	0V

IC601

1	0V/5V	23	2.7V	45	2.2V
2	0V/5V	24	0V	46	4.6V
3	0V/5V	25	0V	47	0.6V
4	0V/5V	26	0V	48	4.2V
5	PS	27	0V	49	4.8V
6	PS	28	0V	50	4.7V
7	PS	29	4.7V	51	0.3V
8	PS	30	3.3V	52	0V
9	PS	31	0V	53	3.6V
10	4.7V	32	4V	54	0V
11	0.1V	33	4V	55	4V
12	4.2V	34	1.2V	56	4V
13	PS	35	4.7V	57	4V
14	PS	36	4.7V	58	4.7V
15	PS	37	0V	59	4.6V
16	4.8V	38	4.7V	60	0V
17	0V	39	4.2V	61	0V
18	0V	40	4.2V	62	4.5V
19	0V	41	5V	63	4.5V
20	0V	42	0.5V	64	4.5V
21	0V	43	4.6V		
22	3.3V	44	1.1V		

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC605

1	PS
2	0V
3	PS
4	0V
5	1.3V
6	13.9V
7	13.9V
8	PS

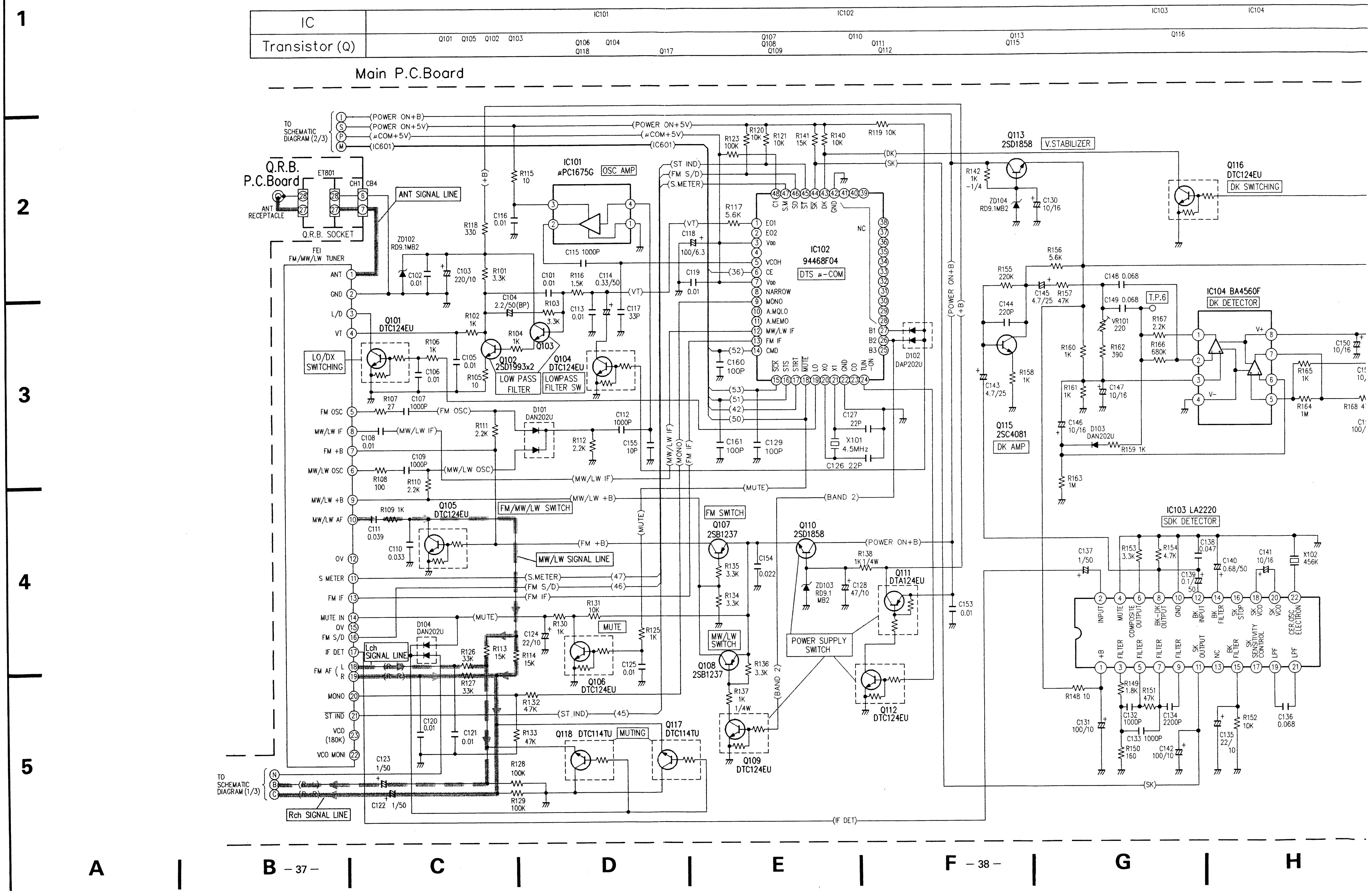
<Measuring Conditions>

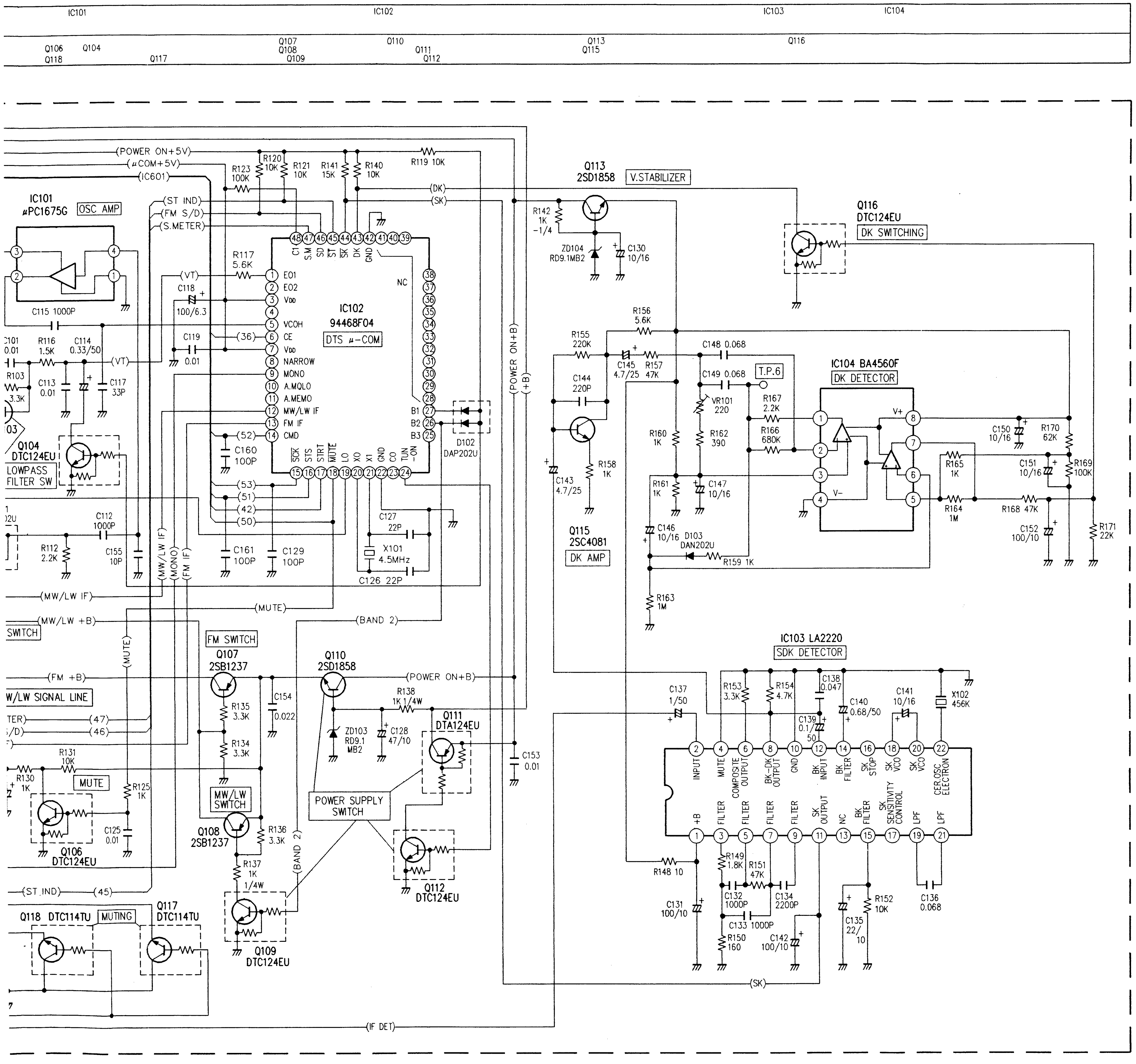
1. Power Supply:14V DC
2. Measuring Tool:Digital Multi Voltmeter.
3. Measuring Standard:Ground=0V
4. Unit Condition:Be Playing back the 2nd. Music of the test CD(YEDS-18).

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1{,}000{,}000}$

Schematic Diagram (3/3)


IC
IC101
IC102
IC103
IC104
Transistor (Q)
Q101 Q105 Q102 Q103
Q106 Q118 Q104
Q117
Q107 Q108 Q109
Q110
Q111 Q112
Q113 Q115
Q116
Main P.C.Board
TO SCHEMATIC DIAGRAM (2/3)
(POWER ON+B)
(POWER ON+5V)
(µCOM+5V)
(IC601)
Q.R.B. P.C.Board
ET801
CH1
CB4
ANT RECEPTACLE
Q.R.B. SOCKET
ANT SIGNAL LINE
FE1 FM/MW/LW TUNER
ANT
GND
L/D
VT
FM OSC
MW/LW IF
FM +B
MW/LW OSC
MW/LW +B
MW/LW AF
OV
S METER
FM IF
MUTE IN
FM S/D
IF DET
FM AF L R
MONO
ST IND
VCO (180K)
VCO MONI
IC101 µPC1675G
OSC AMP
Q101 DTC124EU
LO/DX SWITCHING
Q102 2SD1993x2
Q103
Q104 DTC124EU
LOW PASS FILTER
LOWPASS FILTER SW
D101 DAN202U
Q105 DTC124EU
FM/MW/LW SWITCH
MW/LW SIGNAL LINE
D104 DAN202U
Lch SIGNAL LINE
Q106 DTC124EU
MUTE
Q118 DTC114TU
MUTING
Q117 DTC114TU
TO SCHEMATIC DIAGRAM (1/3)
Rch SIGNAL LINE
ZD102 RD9.1MB2
IC102 94468F04
DTS µ-COM
EO1
EO2
VDD
VCOH
CE
NARROW
MONO
A.MQLO
A.MEMO
MW/LW IF
FM IF
CMD
B1
B2
B3
NC
D102 DAP202U
X101 4.5MHz
FM SWITCH
Q107 2SB1237
MW/LW SWITCH
Q108 2SB1237
Q109 DTC124EU
Q110 2SD1858
ZD103 RD9.1 MB2
Q111 DTA124EU
POWER SUPPLY SWITCH
Q112 DTC124EU
(BAND 2)
(MUTE)
(IF DET)
(SK)
(DK)
Q113 2SD1858
V.STABILIZER
ZD104 RD9.1MB2
Q115 2SC4081
DK AMP
D103 DAN202U
T.P.6
VR101 220
IC104 BA4560F
DK DETECTOR
Q116 DTC124EU
DK SWITCHING
IC103 LA2220
SDK DETECTOR
X102 456K
INPUT
MUTE
COMPOSITE OUTPUT
BK-DK OUTPUT
GND
BK INPUT
BK FILTER
SK STOP
SK VCO
CER.OSC ELECTRON
+B
FILTER
SK OUTPUT
NC
SENSITIVITY CONTROL
LPF
1
2
3
4
5
A
B
C
D
E
F
G
H


IC101
IC102
IC103
IC104
Q106
Q118
Q104
Q117
Q107
Q108
Q109
Q110
Q111
Q112
Q113
Q115
Q116
IC101 µPC1675G OSC AMP
IC102 94468F04 DTS µ-COM
IC103 LA2220 SDK DETECTOR
IC104 BA4560F DK DETECTOR
Q113 2SD1858 V.STABILIZER
Q116 DTC124EU DK SWITCHING
Q115 2SC4081 DK AMP
Q104 DTC124EU LOWPASS FILTER SW
Q106 DTC124EU MUTE
Q107 2SB1237 FM SWITCH
Q108 2SB1237 MW/LW SWITCH
Q109 DTC124EU
Q110 2SD1858
Q111 DTA124EU
Q112 DTC124EU
POWER SUPPLY SWITCH
Q118 DTC114TU MUTING
Q117 DTC114TU
D102 DAP202U
D103 DAN202U
ZD104 RD9.1MB2
ZD103 RD9.1 MB2
X101 4.5MHz
X102 456K
T.P.6
VR101 220
(POWER ON+5V)
(µCOM+5V)
(IC601)
(ST IND)
(FM S/D)
(S.METER)
(VT)
(DK)
(SK)
(MW/LW IF)
(MW/LW +B)
(MUTE)
(BAND 2)
(FM +B)
(POWER ON+B)
(+B)
(IF DET)
MW/LW SIGNAL LINE
SWITCH

IC101

1	0V
2	3.7V
3	1.5V
4	1V

	E	C	B	MODE
Q101	0V	6.6V/0V	4.7V/0V	LO/DX
Q102	0.1V	1.1V~7.4V	0.7V	
Q103	0.7V	9.4V	1.1V	
Q104	0V	0V	0.7V	
Q105	0V	0V	6.7V/0V	FM+B/MW/LW+B
Q106	0V	0V/7.7V	0V/4.7V	
Q107	8.8V	8.7V/0V	8.8V/8.1V	
Q108	8.8V	8.8V/1.4V	8.6V/8.1V	
Q109	0V	8.6V/0V	4.4V/1V	
Q110	8.8V	14V	9.4V	
Q111	0V/13V	13.9V/0V	0V/14V	POWER ON/OFF
Q112	0V	0V/13V	5.1V/0V	RADIO ON/OFF
Q113	8.6V	13.7V	9.2V	
Q115	1V	2.9V	1.6V	
Q116	0V	3.6V	0.6V	
Q117	0.8V	0V	0.1V	
Q118	0.8V	0V	0.1V	

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	3.6V
20	PS	44	0.6V
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

MODE : MW/LW / FM

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

(Measuring Conditions)

1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd. Music of the test CD(YEDS-18).

▬ ANT Signal Line
▬ ▬ MW/LW Signal Line
▬ ▬ L-ch Signal Line
▬▬ R-ch Signal Line

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.
uF=microfarads, pF=picofarads

Abbreviations

RES.=Resistor
C.F.=Carbon Film
M.F.=Metal Film
M.O.=Metal Oxide Film
M.P.=Metal Plate
TR.=Transistor
TRANS.=Transformer
CP.=Chip

CAP.=Capacitor
ELY.=Electrolytic
CER.=Ceramic
MYL.=Mylar
TAN.=Tantalum
POLY.=Polystyrol
PP.=Polypropylene
PLT.=Polyethylene

Symbol No.	Part No.	Description		
Main P. C. Board				
IC's				
IC101	51T96030F01	μ PC1675G		
IC102	51T94468F04	94468F04		
IC103	51T69141F01	LA2220		
IC104	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC201	51T15260W01	TC9200BF		
IC202	51T15261W01	TC9201BF		
IC203	51T84723F02	LC3516AML		
or	51T15420W01	TC5517FL		
or	51T90640F01	CXK5816M		
IC204	51T25676W01	μ PD6376		
IC205	51T25675W01	CXD2551M		
IC206	51T92693F01	BA10358F		
IC207	51T15262W01	TA8101F		
IC208	51T93333F01	NJM2904M		
IC209	51T93333F01	NJM2904M		
IC210	51T15264W01	TCA0372M		
IC211	51T15264W01	TCA0372M		
IC213	51T93532F01	TC4S69F		
IC214	51T16025W01	NJM2100M		
IC403	51T25154W01	BA15532F		
IC404	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC406	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC407	51T15270W01	BU4052BF		
IC408	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC410	51T93532F01	TC4S69F		
IC601	51T25914W01	25914W01		
or	51T15263W01	15263W01		
IC602	51T95014F01	S-8054ALB		
IC603	51T90890F01	M5236ML		
IC604	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC605	51T15510W01	MC34063M		
IC606	51T95014F05	S-8052ALR		
IC607	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
Transistors				
Q101	48T94606F03	CP., DTC124EU		
Q102	48T90181F05	2SD1993		
Q103	48T90181F05	2SD1993		
Q104	48T94606F03	CP., DTC124EU		
Q105	48T94606F03	CP., DTC124EU		
Q106	48T94606F03	CP., DTC124EU		
Q107	48T83417F03	2SB1237		
Q108	48T83417F03	2SB1237		
Q109	48T94606F03	CP., DTC124EU		
Q110	48T83415F03	2SD1858		
Q111	48T94606F53	CP., DTA124EU		
Q112	48T94606F03	CP., DTC124EU		
Q113	48T83415F03	2SD1858		
Q115	48T94582F01	CP., 2SC4081		
Q116	48T94606F03	CP., DTC124EU		
Q117	48T94606F05	CP., DTC114TU		
Q118	48T94606F05	CP., DTC114TU		
Q201	48T83417F03	2SB1237		
Q202	48T94606F53	CP., DTA124EU		
Q203	48T94606F01	CP., DTC144EU		
Q204	48T84238F03	2SB1240		
Q205	48T94606F03	CP., DTC124EU		
Q206	48T81552F01	CP., 2SD1383K		
Q207	48T80614F01	CP., 2SD1664		
Q208	48T94582F01	CP., 2SC4081		
Q209	48T80611F01	CP., 2SB1132		
Q210	48T94606F03	CP., DTC124EU		
Q211	48T94606F53	CP., DTA124EU		
Q401	48T62967F33	CP., DTC343T		
Q402	48T62967F33	CP., DTC343T		
Q403	48T63788F01	CP., 2SD1328		
Q405	48T63788F01	CP., 2SD1328		
Q601	48T94606F03	CP., DTC124EU		
Q603	48T94606F03	CP., DTC124EU		
Q604	48T94606F03	CP., DTC124EU		
Q607	48T94606F03	CP., DTC124EU		
Q609	48T94606F55	CP., DTA114TU		
Q610	48T94581F01	CP., 2SA1576		
Q611	48T94606F03	CP., DTC124EU		
Q612	48T94606F03	CP., DTC124EU		

Symbol No.	Part No.	Description		
Q613	48T94606F03	CP., DTC124EU		
Q614	48T80611F01	CP., 2SB1132		
Q615	48T80611F01	CP., 2SB1132		
Q616	48T94606F03	CP., DTC124EU		
Q617	48T94875F04	CP., DTB123YK		
Q618	48T94606F03	CP., DTC124EU		
Q619	48T15289W03	2SD2008Q		
Q620	48T94606F53	CP., DTA124EU		
Q621	48T94606F03	CP., DTC124EU		
Q622	48T83835F03	2SD1859		
Q623	48T94606F03	CP., DTC124EU		
Q625	48T83417F03	2SB1237		
Q626	48T84238F03	2SB1240		
Q627	48T63420F01	CP., 2SA1037K		
Q628	48T94606F53	CP., DTA124EU		
Q629	48T94606F03	CP., DTC124EU		
Q630	48T94606F03	CP., DTC124EU		
Q631	48T94582F01	CP., 2SC4081		
Q632	48T94606F53	CP., DTA124EU		
Q633	48T94606F53	CP., DTA124EU		
Q634	48T94606F03	CP., DTC124EU		
Q635	48T94606F03	CP., DTC124EU		
Q636	48T94606F53	CP., DTA124EU		
Q637	48T15511W02	CP., 2SB1261		
Q638	48T94606F56	CP., DTA114EU		
Q639	48T94606F03	CP., DTC124EU		
Q641	48T63419F01	CP., 2SA1036K		
Q642	48T94606F03	CP., DTC124EU		
Q645	48T94582F01	CP., 2SC4081		
Q646	48T94606F03	CP., DTC124EU		
Q647	48T94606F53	CP., DTA124EU		
Q650	48T15289W03	2SD2008Q		

Diodes

D101	48T94608F03	CP., DAN202U		
D102	48T94608F02	CP., DAP202U		
D103	48T94608F03	CP., DAN202U		
D104	48T94608F03	CP., DAN202U		
D201	48T94608F03	CP., DAN202U		
D204	48T15512W01	CP., DSM10		
D205	48T94608F03	CP., DAN202U		
D206	48T94608F03	CP., DAN202U		
D601	48T94608F03	CP., DAN202U		
D604	48T94608F01	CP., DA204U		
D605	48C40235G02	10E2		
D606	48T94608F03	CP., DAN202U		
D607	48T94608F02	CP., DAP202U		
D608	48T94608F03	CP., DAN202U		
D611	48T52446F01	CP., MA151WK		

Symbol No.	Part No.	Description		
D612	48T94608F03	CP., DAN202U		
D613	48T15702W01	CP., SB05-05CP		
D614	48T94608F03	CP., DAN202U		
D616	48T94608F03	CP., DAN202U		
D617	48T94608F03	CP., DAN202U		
D618	48T94608F03	CP., DAN202U		
D619	48T94608F03	CP., DAN202U		
D620	48T94608F03	CP., DAN202U		
D622	48C40235G02	10E2		
D624	48T15512W01	CP., DSM10		
D625	48T15512W01	CP., DSM10		
D626	48T94608F03	CP., DAN202U		
D630	48T94608F01	CP., DA204U		
ZD102	48T62934F37	Zener, CP., RD9.1MB2		
ZD103	48T62934F37	Zener, CP., RD9.1MB2		
ZD104	48T62934F37	Zener, CP., RD9.1MB2		
ZD201	48T62934F01	Zener, CP., RD2.4MB1		
ZD601	48T62934F30	Zener, CP., RD7.5MB1		
ZD602	48T62934F19	Zener, CP., RD5.1MB2		
ZD603	48T62934F29	Zener, CP., RD6.8MB3		
ZD604	48T62934F33	Zener, CP., RD8.2MB1		
ZD605	48T62934F22	Zener, CP., RD5.6MB2		
ZD606	48T62934F40	Zener, CP., RD10MB2		
ZD607	48T62934F22	Zener, CP., RD5.6MB2		
ZD608	48T62934F49	Zener, CP., RD13MB2		
ZD610	48T83128F09	Zener, HZS6C3L		

Thermistor/Coils/Crystals

TH201	48T93439F06	Thermistor, 100k ohm		
L601	25C40894G01	Coil, Choke, 1.2mH		
L602	24T71179F05	Coil, Inductor, 220 μH		
L603	24T16271W13	Coil, 220 μH		
X101	91T25806W23	Crystal 4.5MHz		
X102	91T69142F01	CER., LOCK, Crystal 456kHz		
X201	91T25806W92	Crystal 16.9344MHz		
X601	91T15285W01	CER., LOCK, Crystal 4.19MHz		

Symbol No.	Part No.	Description			
Capacitors					
C101	08S65128F69	CP.,	0.01 μ F		
C102	08S65128F69	CP.,	0.01 μ F		
C103	23T16086W01	ELY.,	220 μ F/10V		
C104	23T82372F19	ELY., (BP)	2.2 μ F/50V		
C105	08S65128F69	CP.,	0.01 μ F		
C106	08S65128F69	CP.,	0.01 μ F		
C107	08S65128F57	CP.,	1000pF		
C108	08S65128F69	CP.,	0.01 μ F		
C109	08S65128F57	CP.,	1000pF		
C110	08T15399W02	CP.,	0.033 μ F		
C111	08T90316F24	TF,	0.039 μ F		
C112	08S65128F57	CP.,	1000pF		
C113	08S65128F69	CP.,	0.01 μ F		
C114	23S61523F27	ELY.,	0.33 μ F/50V		
C115	08S65128F57	CP.,	1000pF		
C116	08S65128F69	CP.,	0.01 μ F		
C117	08S65128F23	CP.,	33pF		
C118	23S61523F08	ELY.,	100 μ F/6.3V		
C119	08S65128F69	CP.,	0.01 μ F		
C120	08S65128F69	CP.,	0.01 μ F		
C121	08S65128F69	CP.,	0.01 μ F		
C122	23S61523F29	ELY.,	1 μ F/50V		
C123	23S61523F29	ELY.,	1 μ F/50V		
C124	23S61523F09	ELY.,	22 μ F/10V		
C125	08S65128F69	CP.,	0.01 μ F		
C126	08S82122F21	CP.,	22pF		
C127	08S82122F21	CP.,	22pF		
C128	23S61523F11	ELY.,	47 μ F/10V		
C129	08S65128F35	CP.,	100pF		
C130	23S61523F12	ELY.,	10 μ F/16V		
C131	23S61523F34	ELY.,	100 μ F/10V		
C132	08S72783F35	CP.,	1000pF		
C133	08S72783F35	CP.,	1000pF		
C134	08T90316F09	TF,	2200pF		
C135	23S61523F09	ELY.,	22 μ F/10V		
C136	08T90316F27	TF,	0.068 μ F		
C137	23S61523F29	ELY.,	1 μ F/50V		
C138	08S65128F74	CP.,	0.047 μ F		
C139	23S61523F25	ELY.,	0.1 μ F/50V		
C140	23S61523F35	ELY.,	0.68 μ F/50V		
C141	23S61523F12	ELY.,	10 μ F/16V		
C142	23S61523F34	ELY.,	100 μ F/10V		
C143	23S61523F17	ELY.,	4.7 μ F/25V		
C144	08S65128F43	CP.,	220pF		
C145	23S61523F17	ELY.,	4.7 μ F/25V		
C146	23S61523F11	ELY.,	47 μ F/10V		
C147	23S61523F12	ELY.,	10 μ F/16V		
C148	08T90316F27	TF,	0.068 μ F		
C149	08T90316F27	TF,	0.068 μ F		
C150	23S61523F12	ELY.,	10 μ F/16V		

Symbol No.	Part No.	Description			
C151	23S61523F12	ELY.,	10 μ F/16V		
C152	23S61523F34	ELY.,	100 μ F/10V		
C153	08S65128F69	CP.,	0.01 μ F		
C154	08S65128F72	CP.,	0.022 μ F		
C155	08S65128F12	CP.,	10pF		
C160	08S65128F35	CP.,	100pF		
C161	08S65128F35	CP.,	100pF		
C201	23T74437F29	TAN.,	3.3 μ F/16V		
C202	23S61524F08	ELY.,	100 μ F/6.3V		
C203	08S65128F72	CP.,	0.022 μ F		
C204	23S61524F13	ELY.,	10 μ F/16V		
C205	23T74437F32	TAN.,	10 μ F/16V		
C206	23T74437F32	TAN.,	10 μ F/16V		
C207	08S65128F23	CP.,	33pF		
C208	08S65128F23	CP.,	33pF		
C209	08S65128F04	CP.,	2pF		
C210	08S65128F69	CP.,	0.01 μ F		
C211	23T25149W09	ELY.,	10 μ F/16V		
C212	08S65128F31	CP.,	68pF		
C213	08S65128F31	CP.,	68pF		
C214	08S65128F51	CP.,	470pF		
C215	23S61524F05	ELY.,	22 μ F/6.3V		
C216	08T15399W03	CP.,	0.047 μ F		
C217	08T15399W02	CP.,	0.033 μ F		
C218	08S65128F27	CP.,	47pF		
C219	08S65128F27	CP.,	47pF		
C220	08S65128F27	CP.,	47pF		
C221	08S65128F69	CP.,	0.01 μ F		
C222	08S65128F60	CP.,	1800pF		
C223	08S65128F69	CP.,	0.01 μ F		
C224	08S65128F69	CP.,	0.01 μ F		
C225	08S65128F76	CP.,	0.1 μ F		
C226	23T74437F32	TAN.,	10 μ F/16V		
C227	08S65128F69	CP.,	0.01 μ F		
C228	08S65128F57	CP.,	1000pF		
C229	08S82122F13	CP.,	10pF		
C230	08S82122F13	CP.,	10pF		
C231	08S65128F57	CP.,	1000pF		
C232	08S65128F69	CP.,	0.01 μ F		
C233	23T25149W09	ELY.,	10 μ F/16V		
C234	08S65128F19	CP.,	22pF		
C235	08T15399W02	CP.,	0.033 μ F		
C236	08S65128F65	CP.,	4700pF		
C237	23S61523F12	ELY.,	10 μ F/16V		
C238	08S65128F47	CP.,	330pF		
C239	23S61524F31	ELY.,	0.47 μ F/50V		
C240	08S65128F67	CP.,	6800pF		
C241	08S65128F62	CP.,	2700pF		
C242	08S65128F69	CP.,	0.01 μ F		
C243	08T15807W05	CP.,	0.1 μ F		

Symbol No.	Part No.	Description		
C244	23S61523F17	ELY., 4.7 μ F/25V		
C245	23S61523F12	ELY., 10 μ F/16V		
C246	23S61524F13	ELY., 10 μ F/16V		
C247	08S65128F74	CP., 0.047 μ F		
C248	23S61523F12	ELY., 10 μ F/16V		
C249	08S65128F74	CP., 0.047 μ F		
C250	08S65128F76	CP., 0.1 μ F		
C251	08S65128F74	CP., 0.047 μ F		
C252	23S61524F13	ELY., 10 μ F/16V		
C254	23S61524F13	ELY., 10 μ F/16V		
C255	23S61523F12	ELY., 10 μ F/16V		
C256	23S61524F13	ELY., 10 μ F/16V		
C257	23S61523F29	ELY., 1 μ F/50V		
C258	23T25149W12	ELY., 47 μ F/16V		
C259	23T25149W09	ELY., 10 μ F/16V		
C260	08S65128F12	CP., 10pF		
C401	23T25149W09	ELY., 10 μ F/16V		
C402	23T25149W09	ELY., 10 μ F/16V		
C406	23S61524F13	ELY., 10 μ F/16V		
C417	08S82122F21	CP., 22pF		
C418	08S82122F21	CP., 22pF		
C421	08S72783F33	CP., 680pF		
C422	08S72783F33	CP., 680pF		
C423	08S82122F45	CP., 220pF		
C424	08S82122F45	CP., 220pF		
C427	23T25149W09	ELY., 10 μ F/16V		
C428	23T25149W09	ELY., 10 μ F/16V		
C429	23T25149W15	ELY., 4.7 μ F/35V		
C431	23T25149W10	ELY., 22 μ F/16V		
C432	23T25149W09	ELY., 10 μ F/16V		
C433	23T25149W09	ELY., 10 μ F/16V		
C434	08S65128F43	CP., 220pF		
C435	08S65128F43	CP., 220pF		
C437	23T25149W09	ELY., 10 μ F/16V		
C601	23S61524F13	ELY., 10 μ F/16V		
C602	23S82482F02	ELY., 100 μ F/16V		
C604	23S61524F29	ELY., 0.22 μ F/50V		
C605	23S61523F12	ELY., 10 μ F/16V		
C606	23S61523F26	ELY., 0.22 μ F/50V		
C609	23T16086W02	ELY., 330 μ F/6.3V		
C610	23S61524F13	ELY., 10 μ F/16V		
C612	23S61524F13	ELY., 10 μ F/16V		
C613	23S40657F63	ELY., 1000 μ F/16V		
C614	08S65128F76	CP., 0.1 μ F		
C615	23T25149W02	ELY., 47 μ F/16V		
C617	23S61523F12	ELY., 10 μ F/16V		
C618	23S61524F13	ELY., 10 μ F/16V		
C619	23S61524F33	ELY., 2.2 μ F/50V		
C620	23T25149W15	ELY., 4.7 μ F/35V		
C622	23T25149W15	ELY., 4.7 μ F/35V		

Symbol No.	Part No.	Description		
C625	08S65128F69	CP., 0.01 μ F		
C628	08S65128F37	CP., 120pF		
C629	23T16314W01	ELY., 470 μ F/10V		
C630	23T25149W15	ELY., 4.7 μ F/35V		
C632	08S65128F76	CP., 0.1 μ F		
C633	23T25149W09	ELY., 10 μ F/16V		
C634	23T25149W12	ELY., 47 μ F/16V		
C635	23S61523F29	ELY., 1 μ F/50V		
C636	23S61524F13	ELY., 10 μ F/16V		
C637	23S61523F29	ELY., 1 μ F/50V		
C638	08S65128F69	CP., 0.01 μ F		
C639	23S61523F12	ELY., 10 μ F/16V		
C640	08S65128F69	CP., 0.01 μ F		
C641	08T15399W02	CP., 0.033 μ F		
C697	23T25149W09	ELY., 10 μ F/16V		

Resistors (All resistors are chip 1/10W±5% unless otherwise noted.)

R101	06S64995F65	3.3k ohm		
R102	06S64995F53	1k ohm		
R103	06S64995F65	3.3k ohm		
R104	06S64995F53	1k ohm		
R105	06S64995F05	10 ohm		
R106	06S64995F53	1k ohm		
R107	06S64995F15	27 ohm		
R108	06S64995F29	100 ohm		
R109	06S64995F53	1k ohm		
R110	06S64995F61	2.2k ohm		
R111	06S64995F61	2.2k ohm		
R112	06S64995F61	2.2k ohm		
R113	06S64995F81	15k ohm		
R114	06S64995F81	15k ohm		
R115	06S64995F05	10 ohm		
R116	06S64995F57	1.5k ohm		
R117	06S64995F71	5.6k ohm		
R118	06T70072F41	330 ohm 1/4W		
R119	06S64995F77	10k ohm		
R120	06S64995F77	10k ohm		
R121	06S64995F77	10k ohm		
R123	06S64996F02	100k ohm		
R125	06S64995F53	1k ohm		
R126	06S64995F89	33k ohm		
R127	06S64995F89	33k ohm		
R128	06S64996F02	100k ohm		
R129	06S64996F02	100k ohm		
R130	06S64995F53	1k ohm		
R131	06S64995F77	10k ohm		
R132	06S64995F93	47k ohm		

Symbol No.	Part No.	Description		
R133	06S64995F93	47k ohm		
R134	06S64995F65	3.3k ohm		
R135	06S64995F65	3.3k ohm		
R136	06S64995F65	3.3k ohm		
R137	06T70072F53	1k ohm 1/4W		
R138	06T70072F53	1k ohm 1/4W		
R140	06S64995F77	10k ohm		
R141	06S64995F81	15k ohm		
R142	06T70072F53	1k ohm 1/4W		
R148	06S64995F05	10 ohm		
R149	06S64995F59	1.8k ohm		
R150	06S64995F34	160 ohm		
R151	06S64995F93	47k ohm		
R152	06S64995F77	10k ohm		
R153	06S64995F65	3.3k ohm		
R154	06S64995F69	4.7k ohm		
R155	06S64996F10	220k ohm		
R156	06S64995F71	5.6k ohm		
R157	06S64995F93	47k ohm		
R158	06S64995F53	1k ohm		
R159	06S64995F53	1k ohm		
R160	06S64995F53	1k ohm		
R161	06S64995F53	1k ohm		
R162	06S64995F43	390 ohm		
R163	06S64996F26	1M ohm		
R164	06S64996F26	1M ohm		
R165	06S64995F53	1k ohm		
R166	06S64996F22	680k ohm		
R167	06S64995F61	2.2k ohm		
R168	06S64995F93	47k ohm		
R169	06S64996F02	100k ohm		
R170	06S64995F96	62k ohm		
R171	06S64995F85	22k ohm		
R201	06T70072F05	10 ohm 1/4W		
R202	06S64995F53	1k ohm		
R203	06S64996F26	1M ohm		
R204	06S64995F83	18k ohm		
R205	06S64995F77	10k ohm		
R206	06S64995F55	1.2k ohm		
R207	06S64995F79	12k ohm		
R208	06S64995F93	47k ohm		
R209	06S64995F41	330 ohm		
R210	06S64996F16	390k ohm		
R211	06S64996F14	330k ohm		
R212	06S64995F99	82k ohm		
R213	06S64995F81	15k ohm		
R214	06S64995F53	1k ohm		
R215	06S64995F99	82k ohm		
R216	06S64995F99	82k ohm		
R217	06S64995F73	6.8k ohm		

Symbol No.	Part No.	Description		
R218	06S64996F11	240k ohm		
R219	06S64995F87	27k ohm		
R220	06S64995F74	7.5k ohm		
R221	06S64995F83	18k ohm		
R222	06S64995F79	12k ohm		
R223	06S64995F53	1k ohm		
R224	06S64995F85	22k ohm		
R225	06S64995F79	12k ohm		
R226	06S64995F73	6.8k ohm		
R227	06S64995F75	8.2k ohm		
R228	06S64995F75	8.2k ohm		
R229	06S64995F77	10k ohm		
R230	06S64995F85	22k ohm		
R231	06S64996F26	1M ohm		
R232	06S64995F91	39k ohm		
R233	06S64995F74	7.5k ohm		
R234	06S64995F75	8.2k ohm		
R235	06S64995F67	3.9k ohm		
R236	06S64995F61	2.2k ohm		
R237	06S64995F77	10k ohm		
R238	06S64996F14	330k ohm		
R239	06S64995F73	6.8k ohm		
R240	06S64995F57	1.5k ohm		
R241	06S64996F02	100k ohm		
R242	06S64996F10	220k ohm		
R243	06S64995F85	22k ohm		
R244	06S64995F77	10k ohm		
R245	06S64996F26	1M ohm		
R246	06S64995F97	68k ohm		
R247	06S64995F55	1.2k ohm		
R248	06S64995F97	68k ohm		
R249	06S64995F93	47k ohm		
R250	06S64996F14	330k ohm		
R251	06S64995F75	8.2k ohm		
R252	06S64995F89	33k ohm		
R253	06S64995F53	1k ohm		
R254	06S64995F61	2.2k ohm		
R255	06S64995F83	18k ohm		
R256	06S64996F02	100k ohm		
R257	06S64995F73	6.8k ohm		
R258	06S64995F86	24k ohm		
R259	06S64996F14	330k ohm		
R260	06S64996F02	100k ohm		
R261	06S64996F10	220k ohm		
R262	06S64995F85	22k ohm		
R263	06S64995F91	39k ohm		
R264	06S64995F93	47k ohm		
R265	06S64995F77	10k ohm		
R266	06S64995F85	22k ohm		
R267	06S64995F85	22k ohm		

Symbol No.	Part No.	Description		
R268	06S64995F85	22k ohm		
R269	06S64995F85	22k ohm		
R270	06S64995F85	22k ohm		
R271	06S64995F77	10k ohm		
R272	06S64995F77	10k ohm		
R273	06S64995F05	10 ohm		
R274	06S64995F77	10k ohm		
R275	06T70072F53	1k ohm 1/4W		
R276	06S64995F77	10k ohm		
R277	06S64996F18	470k ohm		
R278	06S64995F05	10 ohm		
R279	06S64995F85	22k ohm		
R280	06S64995F85	22k ohm		
R281	06S64996F18	470k ohm		
R282	06S64995F85	22k ohm		
R283	06S64995F85	22k ohm		
R284	06S64995F33	150 ohm		
R285	06S64995F77	10k ohm		
R286	06S64995F53	1k ohm		
R287	06S64995F77	10k ohm		
R288	06S64995F69	4.7k ohm		
R289	06S64995F69	4.7k ohm		
R290	06S64995F69	4.7k ohm		
R291	06S64996F32	3.3M ohm		
R292	06S64996F26	1M ohm		
R293	06S64995F77	10k ohm		
R294	06S64996F20	560k ohm		
R295	06S64995F53	1k ohm		
R296	06S64996F18	470k ohm		
R297	06S64996F02	100k ohm		
R298	06S64996F02	100k ohm		
R299	06S64995F69	4.7k ohm		
R320	06S64995F79	12k ohm		
R321	06S64995F77	10k ohm		
R401	06S64995F53	1k ohm		
R402	06S64995F53	1k ohm		
R403	06S64995F53	1k ohm		
R404	06S64995F53	1k ohm		
R405	06S64995F37	220 ohm		
R406	06S64995F37	220 ohm		
R415	06S64995F87	27k ohm		
R416	06S64995F87	27k ohm		
R421	06S64995F77	10k ohm		
R422	06S64995F77	10k ohm		
R423	06T70072F61	2.2k ohm 1/4W		
R425	06T70072F61	2.2k ohm 1/4W		
R427	06S64995F83	18k ohm		
R428	06S64995F83	18k ohm		
R429	06S64995F77	10k ohm		
R430	06S64995F77	10k ohm		

Symbol No.	Part No.	Description		
R441	06S64996F04	120k ohm		
R442	06S64996F04	120k ohm		
R443	06S64995F77	10k ohm		
R444	06S64995F77	10k ohm		
R445	06S64996F02	100k ohm		
R446	06S64996F02	100k ohm		
R447	06S64995F85	22k ohm		
R448	06S64995F85	22k ohm		
R449	06S64995F85	22k ohm		
R450	06S64995F85	22k ohm		
R451	06S64995F77	10k ohm		
R452	06S64995F77	10k ohm		
R459	06S64995F83	18k ohm		
R460	06S64995F83	18k ohm		
R461	06S64995F69	4.7k ohm		
R462	06S64995F69	4.7k ohm		
R463	06S64995F57	1.5k ohm		
R464	06S64995F57	1.5k ohm		
R465	06S64995F77	10k ohm		
R466	06S64995F77	10k ohm		
R467	06S64995F73	6.8k ohm		
R468	06S64995F85	22k ohm		
R470	06S64995F85	22k ohm		
R471	06S64995F85	22k ohm		
R472	06S64995F53	1K ohm		
R473	06S64995F53	1k ohm		
R474	06S64995F53	1k ohm		
R475	06S64995F53	1k ohm		
R480	06S64995F19	39 ohm		
R493	06S64996F02	100k ohm		
R601	06S64995F77	10k ohm		
R602	06T70072F61	2.2k ohm 1/4W		
R604	06T70072F53	1k ohm 1/4W		
R606	06S64995F05	10 ohm		
R607	06T70072F65	3.3k ohm 1/4W		
R608	06S64995F69	4.7k ohm		
R609	06S64995F85	22k ohm		
R610	06S64995F69	4.7k ohm		
R611	06S64995F85	22k ohm		
R612	06T70072F78	2.2 ohm 1/4W		
R613	06S64995F85	22k ohm		
R614	06S64995F61	2.2k ohm		
R615	06S64995F77	10k ohm		
R616	06S64995F77	10k ohm		
R617	06S64995F77	10k ohm		
R618	06S64995F69	4.7k ohm		
R619	06S64995F53	1k ohm		
R620	06S64995F77	10k ohm		
R621	06T70072F53	1k ohm 1/4W		
R622	06S64995F99	82k ohm		

Symbol No.	Part No.	Description		
R624	06S64995F45	470 ohm		
R625	06S64995F77	10k ohm		
R626	06T70072F53	1k ohm 1/4W		
R627	06T70072F37	220 ohm 1/4W		
R628	06S64995F81	15k ohm		
R629	06S64995F70	5.1k ohm		
R630	06S64995F87	27k ohm		
R631	06S64995F78	11k ohm		
R632	06S64995F77	10k ohm		
R633	06T70072F45	470 ohm 1/4W		
R634	06S64995F77	10k ohm		
R635	06S64995F61	2.2k ohm		
R636	06S64996F10	220k ohm		
R637	06S64995F77	10k ohm		
R638	06S64995F77	10k ohm		
R639	06S64996F02	100k ohm		
R641	06S64996F02	100k ohm		
R642	06S64996F02	100k ohm		
R643	06S64996F02	100k ohm		
R644	06S64996F02	100k ohm		
R645	06S64996F02	100k ohm		
R646	06S64996F02	100k ohm		
R647	06S64995F93	47k ohm		
R648	06S64995F77	10k ohm		
R649	06S64995F77	10k ohm		
R650	06S64995F77	10k ohm		
R651	06S64995F63	2.7k ohm		
R652	06S64996F02	100k ohm		
R653	06S64996F02	100k ohm		
R654	06S64995F81	15k ohm		
R655	06T70072F29	100 ohm 1/4W		
R656	06T70072F47	560 ohm 1/4W		
R657	06S64996F02	100k ohm		
R658	06S64996F02	100k ohm		
R659	06T70072F53	1k ohm 1/4W		
R660	06S64996F02	100k ohm		
R663	06S64995F77	10k ohm		
R665	06S64995F85	22k ohm		
R666	06T70072F43	390 ohm 1/4W		
R668	06T70072F47	560 ohm 1/4W		
R669	06S64995F69	4.7k ohm		
R670	06S64995F53	1k ohm		
R671	06S64995F61	2.2k ohm		
R672	06S64995F85	22k ohm		
R673	06S64995F53	1k ohm		
R674	06S64995F45	470 ohm		
R680	06S64995F65	3.3k ohm		
R681	06S64996F03	110k ohm		
R682	06S64996F04	120k ohm		
R683	06S64996F02	100k ohm		

Symbol No.	Part No.	Description		
R684	06S64995F91	39k ohm		
R685	06S64995F93	47k ohm		
R686	06S64995F93	47k ohm		
R688	06S53330F77	10k ohm 1/8W		
R698	06S64995F77	10k ohm		
R699	06S64995F77	10k ohm		
VR101	18T10024W03	Variable, 220 ohm		
VR201	18T15805W19	Variable, 100k ohm		
VR202	18T10024W16	Variable, 33k ohm		
VR406	18T25095W01	Variable, 220 ohm		
VR401 S801 S905	18T15283W01	Volume, Rotary (VOLUME/BAL/FAD) (POWER) (SDK)		

Load/Photo (1) P. C. Board

IC/Transistors

IC301	51T15267W01	IC, LB1641		
PT301	48T92913F01	PHOTO, PT360		
PT302	48T92913F01	PHOTO, PT360		
PT303	48T92913F01	PHOTO, PT360		

Diode

ZD301	48T15440W12	Zener, UTZJ6.2C		

Capacitors

C301	08S65128F69	CP., 0.01 μF		
C302	08S65128F69	CP., 0.01 μF		

Resistors (All resistors are chip 1/8W±5% unless otherwise noted.)

R304	06S53331F02	100k ohm		
R305	06S53331F02	100k ohm		
R306	06S53331F02	100k ohm		
R308	06T70072F01	4.7 ohm 1/4W		
R309	06T70072F01	4.7 ohm 1/4W		
R310	06S53330F47	560 ohm		
R311	06S53331F02	100k ohm		

Symbol No.	Part No.	Description		
Load/Photo (2) P. C. Board				
LED's				
LD301	48T16057W02	LED, AN 501－B1 (RED)		
LD302	48T16057W02	LED, AN 501－B1 (RED)		
LD303	48T16057W02	LED, AN 501－B1 (RED)		
Resistors (All resistors are chip 1/8W±5% unless otherwise noted.)				
R301	06S53330F43	390 ohm		
R302	06S53330F47	560 ohm		
Main-Front P. C. Board				
IC's				
IC405	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC901	51T15269W02	MSC1149GS		
IC902	51T15269W02	MSC1149GS		
Transistors				
Q901	48T63419F01	CP., 2SA1036K		
Q903	48T63461F01	CP., 2SC2411K		
Diodes/LED's				
D901	48T94608F01	CP., DA204U		
ZD901	48T62934F27	Zener, CP., RD6.8MB1		
LD902	48T42449F12	LED, BG5535K (GRN)		
LD903	48T42449F12	LED, BG5335K (GRN)		
Switches				
S901	40T66861F03	Tact, SKHHAQ (RESET)		
S902	40T66861F03	Tact, SKHHAQ (MONO)		
S903	40T66861F03	Tact, SKHHAQ (DX)		
S904	40T66861F03	Tact, SKHHAQ (TU/BAND)		
S906	40T66861F03	Tact, SKHHAQ (UP/⏭)		

Symbol No.	Part No.	Description		
S907	40T66861F03	Tact, SKHHAQ (4)		
S908	40T66861F03	Tact, SKHHAQ (5)		
S909	40T66861F03	Tact, SKHHAQ (6)		
S910	40T10876W12	Tact, SKHLAJ (TUNE/DISP)		
S911	40T66861F03	Tact, SKHHAQ (DOWN/⏮)		
S912	40T66861F03	Tact, SKHHAQ (1/MIX)		
S913	40T66861F03	Tact, SKHHAQ (2/REP)		
S914	40T66861F03	Tact, SKHHAQ (3/SCAN)		
S915	40T66861F03	Tact, SKHHAQ (DISC/▶/❚❚)		
S916	40T66861F03	Tact, SKHHAQ (EJECT)		
Lamps				
PL901	65T25170W06	Pilot, 6V－70mA		
PL902	65T25170W06	Pilot, 6V－70mA		
PL903	65T25170W06	Pilot, 6V－70mA		
PL904	65T25170W06	Pilot, 6V－70mA		
Capacitors				
C408	23T25149W15	ELY., 4.7 μF/35V		
C409	08S82122F21	CP., 22pF		
C410	08S82122F21	CP., 22pF		
C411	08T90316F22	TF, 0.027 μF		
C412	08T90316F22	TF, 0.027 μF		
C413	08T90316F15	TF, 6800pF		
C414	08T90316F15	TF, 6800pF		
C415	08S82122F37	CP., 100pF		
C416	08S82122F37	CP., 100pF		
Resistors (All resistors are chip 1/10W±5% unless otherwise noted.)				
R431	06S64995F77	10k ohm		
R432	06S64995F77	10k ohm		
R433	06S64996F26	1M ohm		
R434	06S64996F26	1M ohm		
R435	06S64995F53	1k ohm		
R436	06S64995F53	1k ohm		
R437	06S64995F53	1k ohm		
R438	06S64995F53	1k ohm		
R439	06S64995F77	10k ohm		
R440	06S64995F77	10k ohm		

Symbol No.	Part No.	Description		
R901	06S64995F77	10k ohm		
R902	06S64995F65	3.3k ohm		
R903	06T70072F05	10 ohm 1/4W		
R905	06S64995F71	5.6k ohm		
R906	06S64995F65	3.3k ohm		
R907	06S64995F61	2.2k ohm		
R908	06S64995F93	47k ohm		
R909	06S64995F71	5.6k ohm		
R910	06S64995F65	3.3k ohm		
R911	06S64995F61	2.2k ohm		
R912	06S64995F89	33k ohm		
R913	06S64995F77	10k ohm		
R914	06S64995F71	5.6k ohm		
R915	06S64995F65	3.3k ohm		
R916	06S64995F61	2.2k ohm		
R917	06S64995F45	470 ohm		
R918	06T70072F37	220 ohm 1/4W		
R925	06T70072F17	33 ohm 1/4W		
R926	06T70072F35	180 ohm 1/4W		
VR404	18T15284W01	Volume, Slide (Treble)		
VR405	18T15284W01	Volume, Slide (Bass)		

QRB P. C. Board

Capacitors

Symbol No.	Part No.	Description		
C650	08S65128F57	CP., 1000pF		
C651	08S65128F57	CP., 1000pF		
C652	08S65128F57	CP., 1000pF		
C653	08S65128F57	CP., 1000pF		
C657	08S65128F57	CP., 1000pF		
C658	08S65128F57	CP., 1000pF		
C661	08S65128F57	CP., 1000pF		
C662	08S65128F57	CP., 1000pF		

Miscellaneous

Symbol No.	Part No.	Description		
BA601	60T91060F01	Battery Lithium (CR2032-HE2)		
ET801	09T15921W03	QRB, Socket (22P)		
FL901	65T15282W03	FL Display, VFD (6-BT-86N)		
HD201	88T15309W01	Optical Pick Up Unit		
LD304	48T16057W02	LED, AN501 (RED)		

Symbol No.	Part No.	Description		
M301	01V13100W97	Assy., Motor Loading		
M302	59T91005F01	Motor, Spindle		
M303	59T52973F03	Motor, Sled		
PT304	48T92913F01	Transistor, Photo PT360		
S301	40T71025F03	Switch, Detector (CAM END)		
S302	40T71025F01	Switch, Detector (LIMIT)		
SD301	01A90816F01	Assy., DP Frame Solenoid		

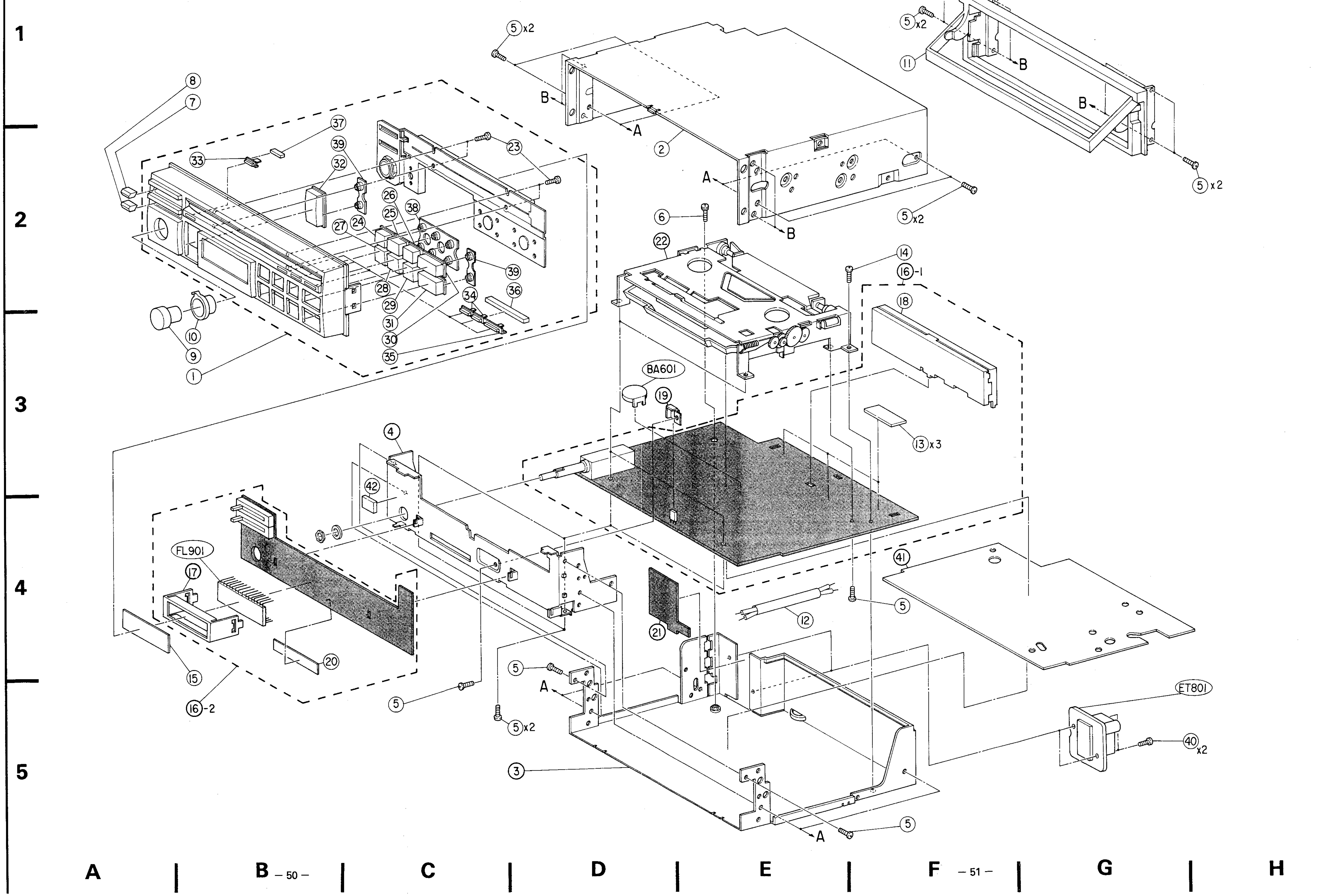
Cabinet Assembly Parts List

Symbol No.	Index	Part No.	Description		
1	3-B	13D21708W05	Assy., Nosepiece		
2	2-D	15C21807W04	Cover, Top		
5		03S44205G34	Screw, Pan (M2.6 × 5)		
6	2-D	03C40121T43	Screw, W/Double Washer (M2.6 × 5)		
7	1-B	36B10950W01	Knob, Slide (A)		
8	1-B	36B10950W02	Knob, Slide (B)		
9	3-B	36A94114F01	Knob, Control (Front)		
10	3-B	36A94115F01	Knob, Control (Back)		
11	1-F	07C20703W03	Assy., Handle Bracket		
12	4-E	01T74272F09	Assy., Shield Wire		
13	3-F	14S58462F74	Insulator, Cover		
14	2-F	03S44205G29	Screw, Pan (M2.6 × 6)		
15	4-B	26B11440W03	Reflector, Sheet		
18	2-F	77C96028W01	MW/LW/FM Unit (MB4A7010) (FE1)		
20	4-B	75S12196W16	Cushion, Rubber		
23	2-D	03S68555F07	Screw, Pan (M2 × 4)		
24	2-C	36C94090F25	Knob, 1/Mix		
25	2-C	36C94090F26	Knob, 2/Repeat		
26	2-C	36C94090F27	Knob, 3/Scan		
27	2-C	36C94090F28	Knob, 4		
28	2-C	36C94090F29	Knob, 5		
29	2-C	36C94090F30	Knob, 6		
30	3-C	36B21710W01	Knob, Tuner/Band		
31	3-C	36B21710W02	Knob, Disc		
32	2-B	36B10947W01	Knob, UP/DN		
33	2-B	36A10953W01	Knob, Push (A)		
34	2-C	36A10953W02	Knob, Push (B)		
35	3-C	36A10954W02	Knob, Eject		
36	2-D	75S92415F88	Cushion, Knob		
37	2-B	75S92415F85	Cushion, Knob		
38	2-C	75B94097F01	Cushion, Knob		
39		75B94097F02	Cushion, Knob (B)		
40	5-G	03S44205G76	Screw, Pan (M2.6 × 8)		
42	3-C	14S71058F53	Insulator, Cover		

Symbol No.	Index	Part No.	Description		

NOTE : The parts without part numbers are not supplied.

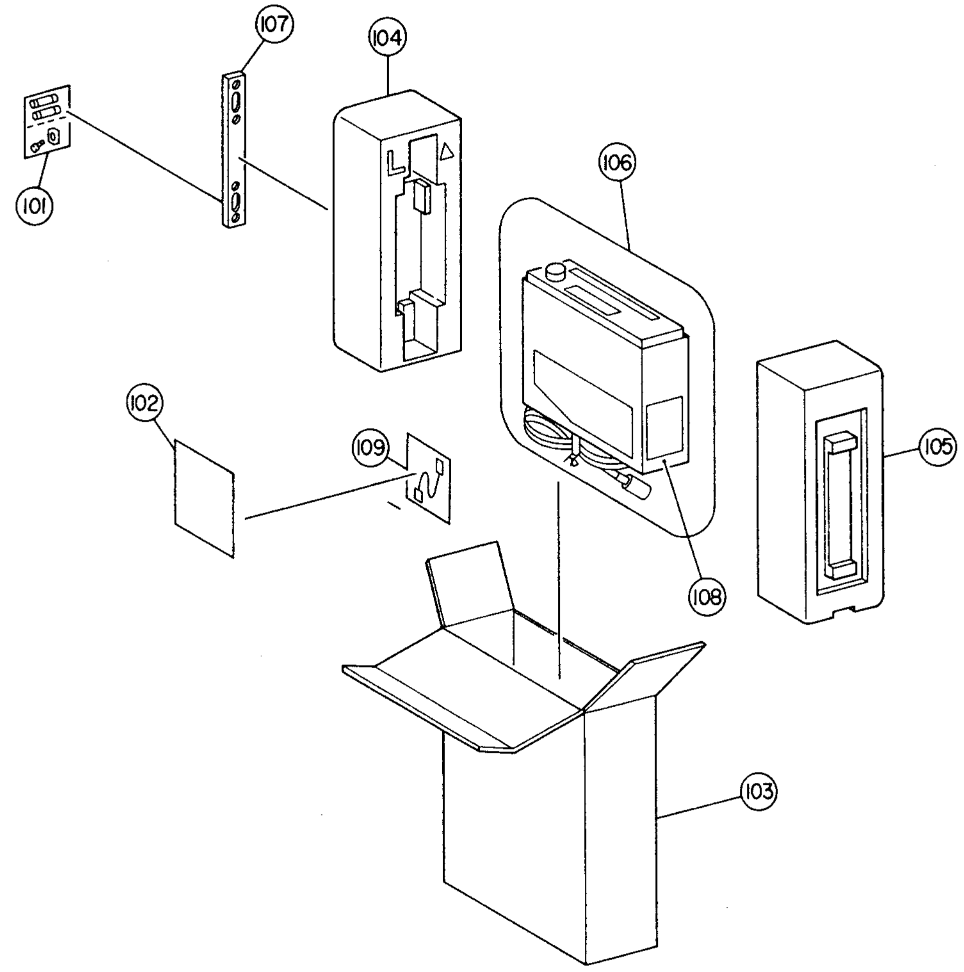
Exploded View (Cabinet)


1
2
3
4
5
A
B
C
D
E
F
G
H
⑤x2
B
A
②
⑤x2
⑪
B
B
⑤x2
A
B
⑤x2
⑧
⑦
㊲
㉝
㊴
㉜
㉓
㉓
㉖
㉕
㊳
㉗
㉔
㉘
㊴
㉙
㉞
㊱
㉛
㉚
㉟
⑩
⑨
①
⑥
㉒
⑭
⑯-1
⑱
BA601
⑲
⑬x3
④
㊷
FL901
⑰
⑮
⑳
⑯-2
㊶
⑤
⑫
㉑
⑤
A
⑤
⑤x2
ET801
㊵x2
③
⑤
A

Packing Assembly Parts List

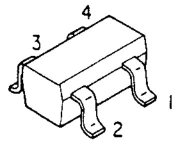
Symbol No.	Part No.	Description		
101	01V11900W92	Assy., Installation Kit		
101-1	02B47353F01	Nut, Hex (M5)		
101-2	03S40012G66	Screw, Tapping (M5 × 20)		
101-3	03B44963F03	Bolt, Hex W/Washer (M5 × 10)		
101-4	03A40155F05	Bolt, Hex (M5 × 14)		
101-5	03A40155F01	Bolt, Hex (M5 × 8)		
101-6	03A84814F04	Screw, Bind (M2.6 × 18)		
101-7	43A58272F04	Spacer		
101-8	45A41684U01	Arm, Adapter		
102	68P21910W03	Owner's Manual		
103	56S20232W86	Carton, Packing (Individual)		
104	56D13048W01	Tray, Packing (L)		
105	56D13048W02	Tray, Packing (R)		
106	56B40990T36	Sack, Polyethylene		
107	07B64552F01	Bracket, Strap Receiver		
108	01V24200W63	Assy., Mother Case		
108−1	01T94603F10	Assy., QRB Connector (PLUG)		
108−2	15D94518F01	Case, Mother		
108−3	03S44205G33	Screw, Pan (M2.6 × 8)		
108−4	03S44205G07	Screw, Pan (M2.6 × 5)		
109	01T96095F01	Assy., Connector (4P)		

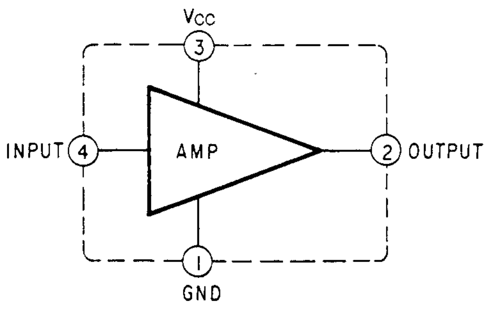
Packing Method View


107
104
106
101
102
109
105
108
103

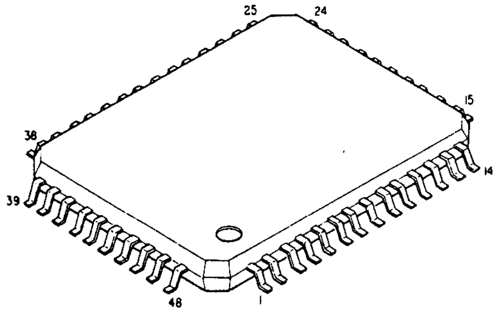
Semi-Conductor Lead Identifications

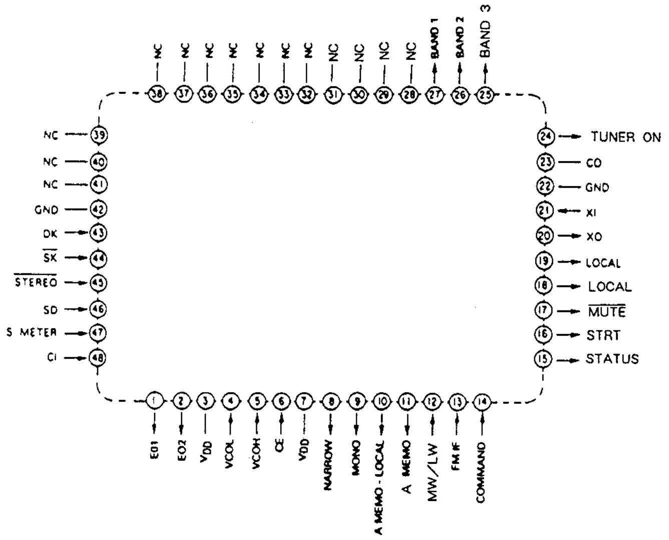
µ PC1675G : IC101



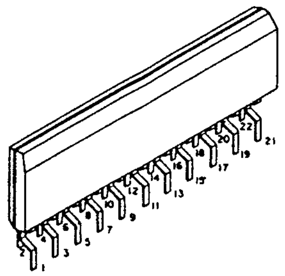

Vcc
3
INPUT 4
AMP
2 OUTPUT
1
GND

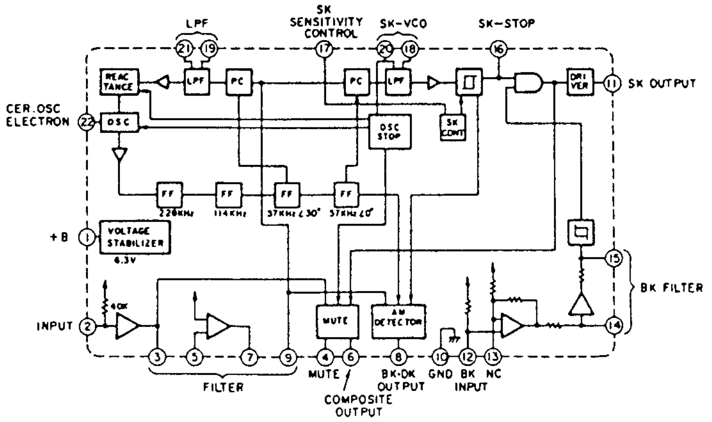
94468F04 : IC102


25
24
15
38
14
39
48
1

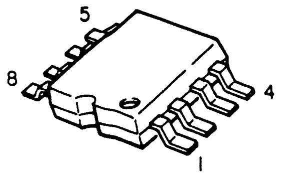

NC
NC
NC
NC
NC
NC
NC
NC
NC
NC
NC
BAND 1
BAND 2
BAND 3
NC 39
NC 40
NC 41
GND 42
DK 43
SK 44
STEREO 45
SD 46
S METER 47
CI 48
24 TUNER ON
23 CO
22 GND
21 XI
20 XO
19 LOCAL
18 LOCAL
17 MUTE
16 STRT
15 STATUS
E01
E02
VDD
VCOL
VCOH
CE
VDD
NARROW
MONO
A MEMO - LOCAL
A MEMO
MW/LW
FM IF
COMMAND

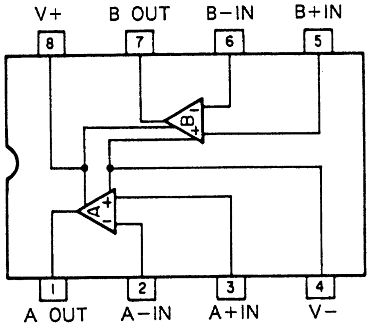
LA2220 : IC103


1
5
7
9
11
13
15
17
19
21
22
20
18
16

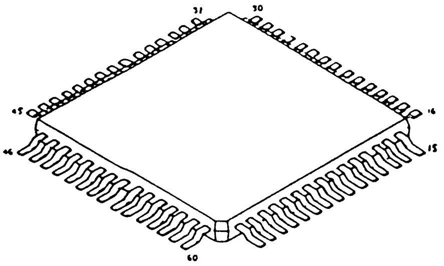

LPF
SK SENSITIVITY CONTROL
SK−VCO
SK−STOP
REAC TANCE
LPF
PC
PC
LPF
DRI VER
SK OUTPUT
CER.OSC ELECTRON
OSC
OSC STOP
SK CONT
FF
FF
FF
FF
220KHz
114KHz
37KHz ∠30°
37KHz ∠0°
+B
VOLTAGE STABILIZER
6.3V
BK FILTER
INPUT
40K
MUTE
AM DETECTOR
FILTER
MUTE
COMPOSITE OUTPUT
BK-DK OUTPUT
GND
BK INPUT
NC

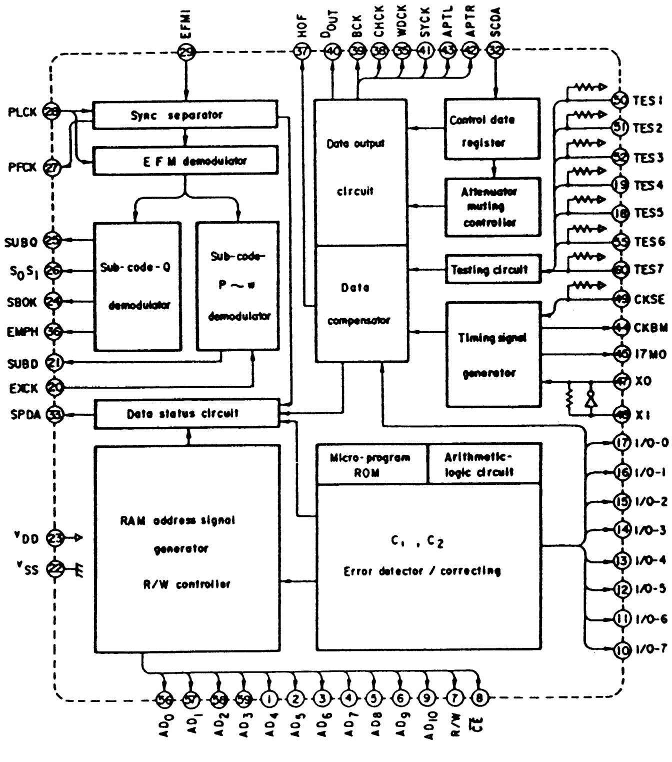
BA4560F : IC104, 404, 405, 406, 408, 604, 607
NJM4560E : IC104, 404, 405, 406, 408, 604, 607



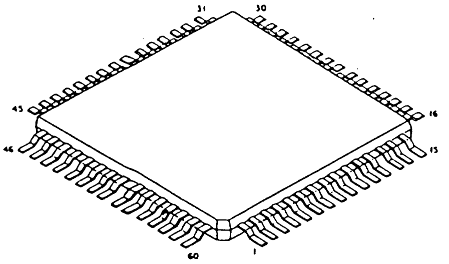

V+
B OUT
B−IN
B+IN
8
7
6
5
B
A
1
2
3
4
A OUT
A−IN
A+IN
V−

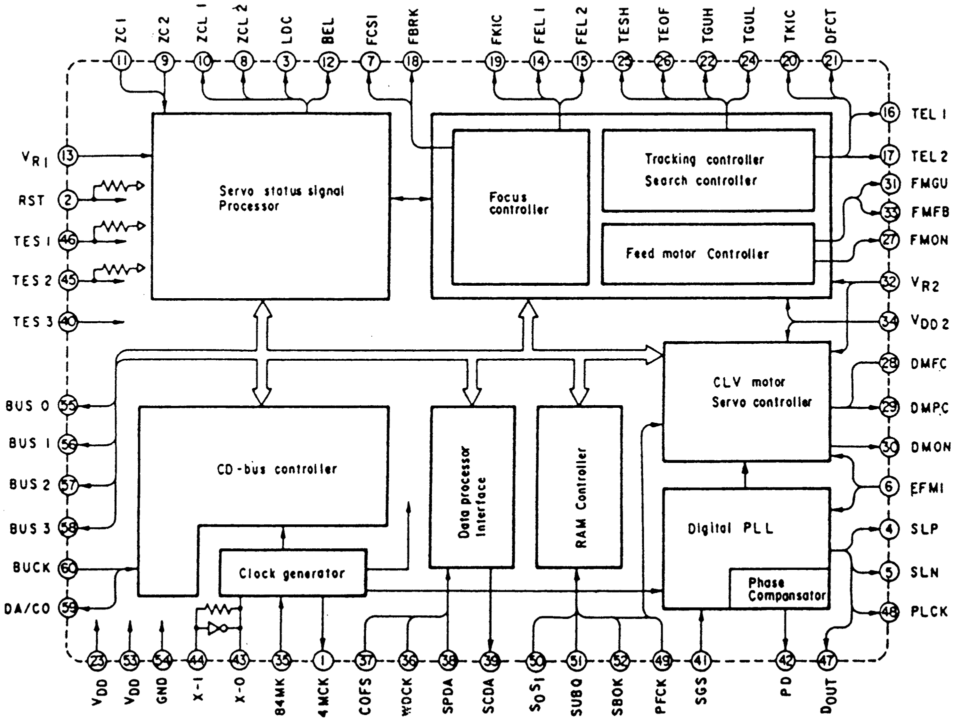
TC9200BF : IC201


31
30
45
16
46
15
60

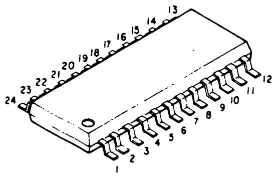

EFMI 29
HOF 37
D_OUT 40
BCK 39
CHCK 38
WDCK 35
SYCK 41
APTL 43
APTR 42
SCDA 32
PLCK 28
PFCK 27
SUBQ 25
S0S1 26
SBOK 24
EMPH 36
SUBD 21
EXCK 20
SPDA 33
VDD 23
VSS 22
Sync separator
E F M demodulator
Sub-code-Q demodulator
Sub-code-P ~ w demodulator
Data status circuit
RAM address signal generator R/W controller
Data output circuit
Data compensator
Control data register
Attenuator muting controller
Testing circuit
Timing signal generator
Micro-program ROM
Arithmetic-logic circuit
C1 , C2 Error detector / correcting
50 TES1
51 TES2
52 TES3
19 TES4
18 TES5
55 TES6
60 TES7
CKSE
44 CKBM
17MO
47 XO
XI
17 I/O-0
16 I/O-1
15 I/O-2
14 I/O-3
13 I/O-4
12 I/O-5
11 I/O-6
10 I/O-7
56 AD0
57 AD1
58 AD2
59 AD3
1 AD4
2 AD5
3 AD6
4 AD7
5 AD8
6 AD9
9 AD10
7 R/W
8 CE

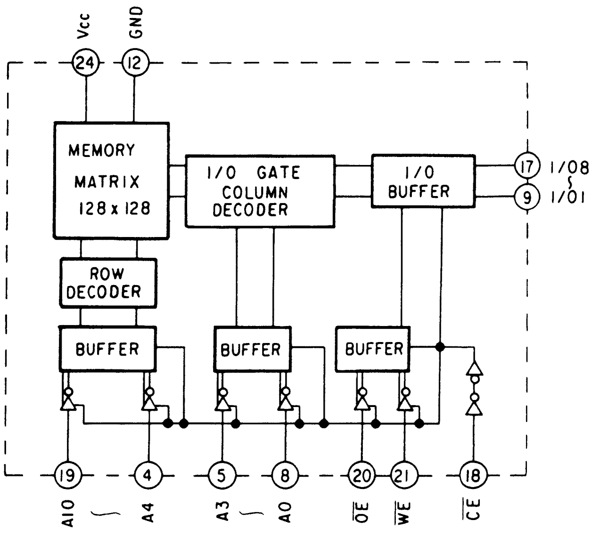
TC9201BF : IC202


31
30
45
16
46
15
60
1

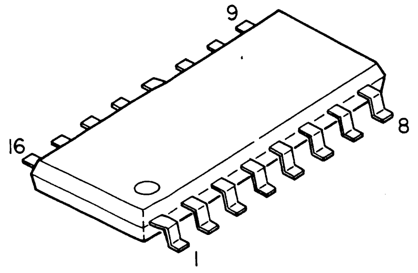

ZC1
ZC2
ZCL1
ZCL2
LDC
BEL
FCSI
FBRK
FKIC
FEL1
FEL2
TESH
TEOF
TGUH
TGUL
TKIC
DFCT
11
9
10
8
3
12
7
18
19
14
15
25
26
22
24
20
21
VR1
RST
TES1
TES2
TES3
13
2
46
45
40
Servo status signal Processor
Focus controller
Tracking controller
Search controller
Feed motor Controller
16
17
31
33
27
32
34
TEL1
TEL2
FMGU
FMFB
FMON
VR2
VDD2
BUS0
BUS1
BUS2
BUS3
BUCK
DA/CO
55
56
57
58
60
59
CD-bus controller
Clock generator
Data processor Interface
RAM Controller
CLV motor Servo controller
Digital PLL
Phase Compensator
28
29
30
6
4
5
48
DMFC
DMPC
DMON
EFMI
SLP
SLN
PLCK
23
53
54
44
43
35
1
37
36
38
39
50
51
52
49
41
42
47
VDD
VDD
GND
X-I
X-O
84MK
4MCK
COFS
WDCK
SPDA
SCDA
SoSI
SUBQ
SBOK
PFCK
SGS
PD
DOUT

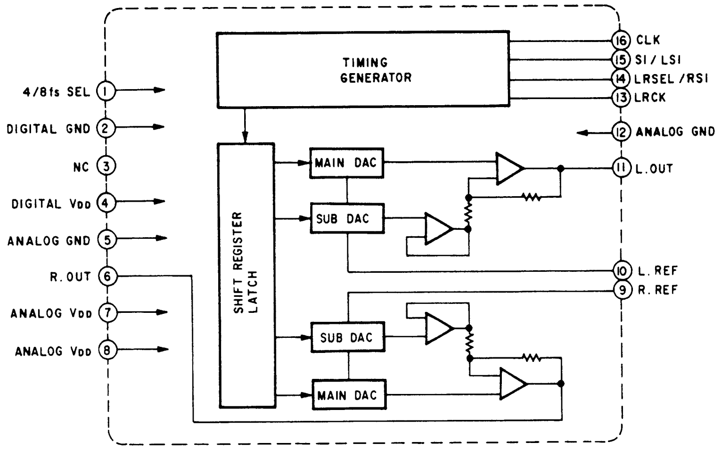
CXK5816M
LC3516ML
TC5517FL
: IC203


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

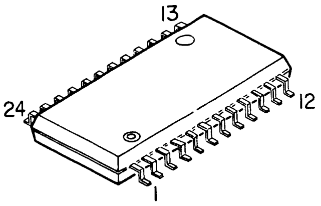

Vcc
GND
24
12
MEMORY MATRIX 128 x 128
I/O GATE COLUMN DECODER
I/O BUFFER
17
9
I/08
I/01
ROW DECODER
BUFFER
BUFFER
BUFFER
19
4
5
8
20
21
18
A10
A4
A3
A0
OE
WE
CE

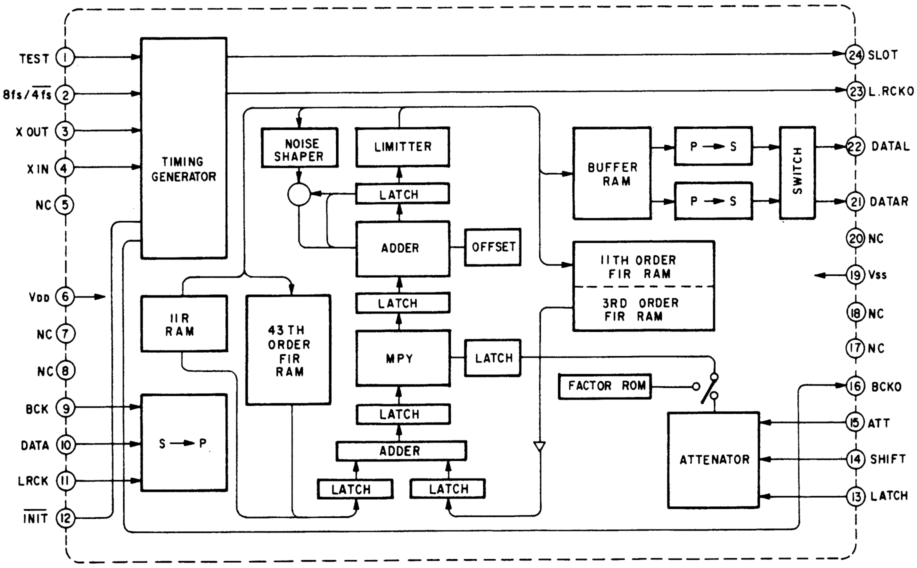
μ PD6376 : IC204



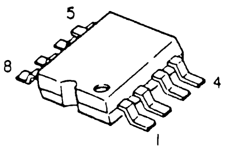

TIMING GENERATOR
SHIFT REGISTER LATCH
MAIN DAC
SUB DAC
SUB DAC
MAIN DAC
4/8fs SEL ①
DIGITAL GND ②
NC ③
DIGITAL VDD ④
ANALOG GND ⑤
R.OUT ⑥
ANALOG VDD ⑦
ANALOG VDD ⑧
⑯ CLK
⑮ SI / LSI
⑭ LRSEL / RSI
⑬ LRCK
⑫ ANALOG GND
⑪ L.OUT
⑩ L.REF
⑨ R.REF

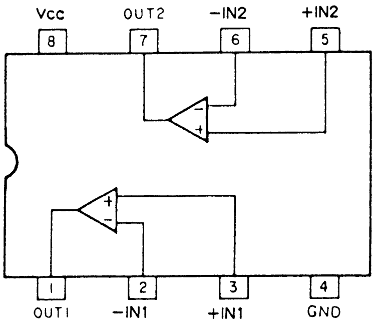
CXD2551M : IC205



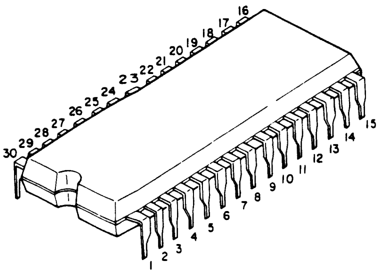

TEST ①
8fs/4fs ②
X OUT ③
XIN ④
NC ⑤
VDD ⑥
NC ⑦
NC ⑧
BCK ⑨
DATA ⑩
LRCK ⑪
INIT ⑫
TIMING GENERATOR
NOISE SHAPER
LIMITTER
LATCH
ADDER
OFFSET
LATCH
MPY
LATCH
LATCH
ADDER
LATCH
LATCH
IIR RAM
43TH ORDER FIR RAM
S → P
BUFFER RAM
P → S
P → S
SWITCH
11TH ORDER FIR RAM
3RD ORDER FIR RAM
FACTOR ROM
ATTENATOR
㉔ SLOT
㉓ L.RCKO
㉒ DATAL
㉑ DATAR
⑳ NC
⑲ Vss
⑱ NC
⑰ NC
⑯ BCKO
⑮ ATT
⑭ SHIFT
⑬ LATCH

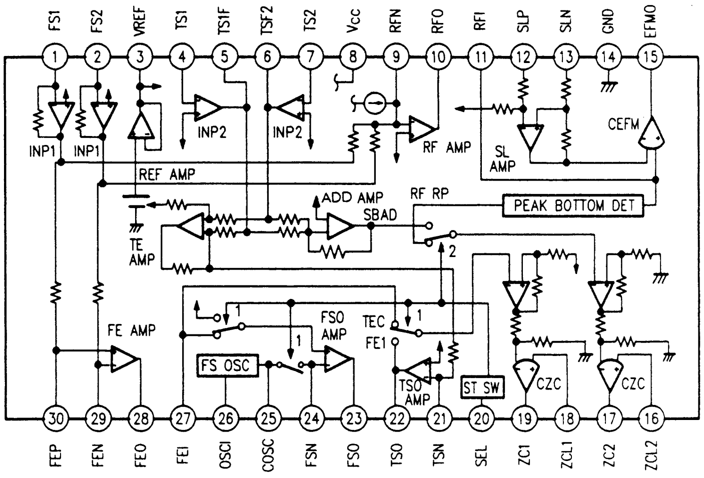
BA10358F : IC206
BA15532F : IC403



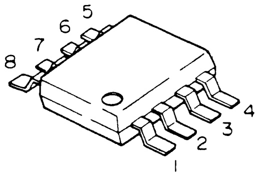

Vcc
OUT2
−IN2
+IN2
8
7
6
5
1
2
3
4
OUT1
−IN1
+IN1
GND

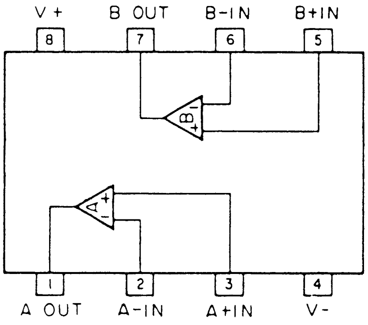
TA8101F : IC207


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30

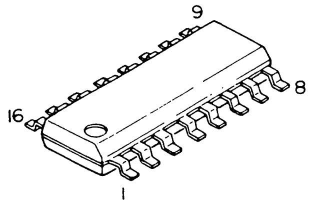

FS1
FS2
VREF
TS1
TS1F
TSF2
TS2
Vcc
RFN
RFO
RFI
SLP
SLN
GND
EFMO
INP1
INP1
INP2
INP2
REF AMP
RF AMP
SL AMP
CEFM
TE AMP
ADD AMP
SBAD
RF RP
PEAK BOTTOM DET
FE AMP
FS OSC
FSO AMP
TEC
FE1
TSO AMP
ST SW
CZC
CZC
FEP
FEN
FEO
FEI
OSCI
COSC
FSN
FSO
TSO
TSN
SEL
ZC1
ZCL1
ZC2
ZCL2

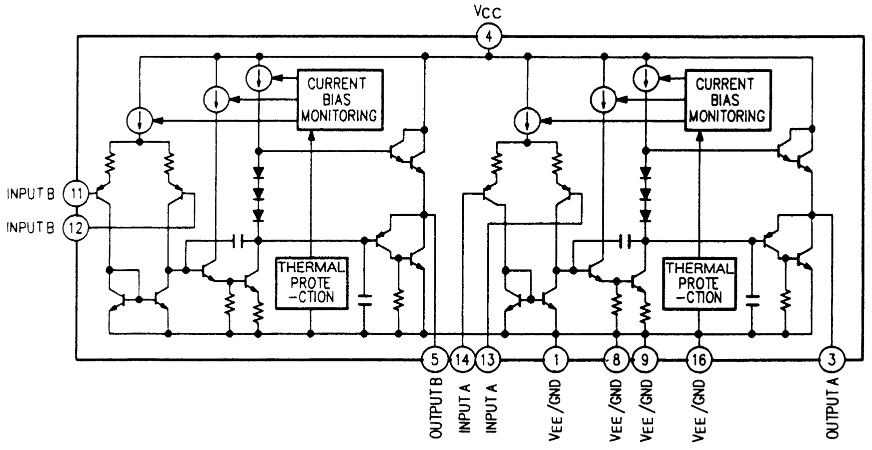
NJM2904M : IC208, 209
NJM2100M : IC214



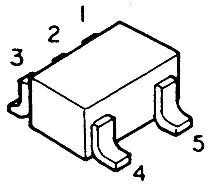

V+
B OUT
B-IN
B+IN
8
7
6
5
B
A
1
2
3
4
A OUT
A-IN
A+IN
V-

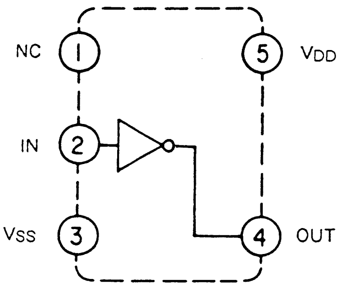
TCA0372M : IC210, 211



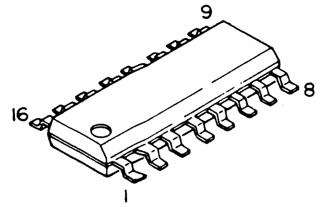

Vcc
4
CURRENT BIAS MONITORING
CURRENT BIAS MONITORING
THERMAL PROTE -CTION
THERMAL PROTE -CTION
INPUT B 11
INPUT B 12
5
14
13
1
8
9
16
3
OUTPUT B
INPUT A
INPUT A
VEE/GND
VEE/GND
VEE/GND
VEE/GND
OUTPUT A

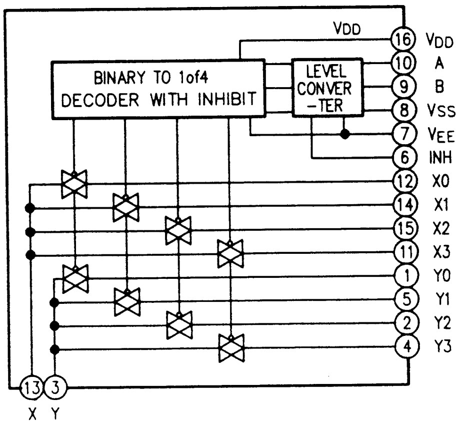
TC4S69F : IC213, 410



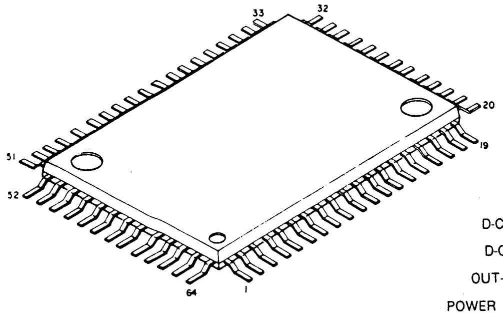

NC
1
5
VDD
IN
2
VSS
3
4
OUT

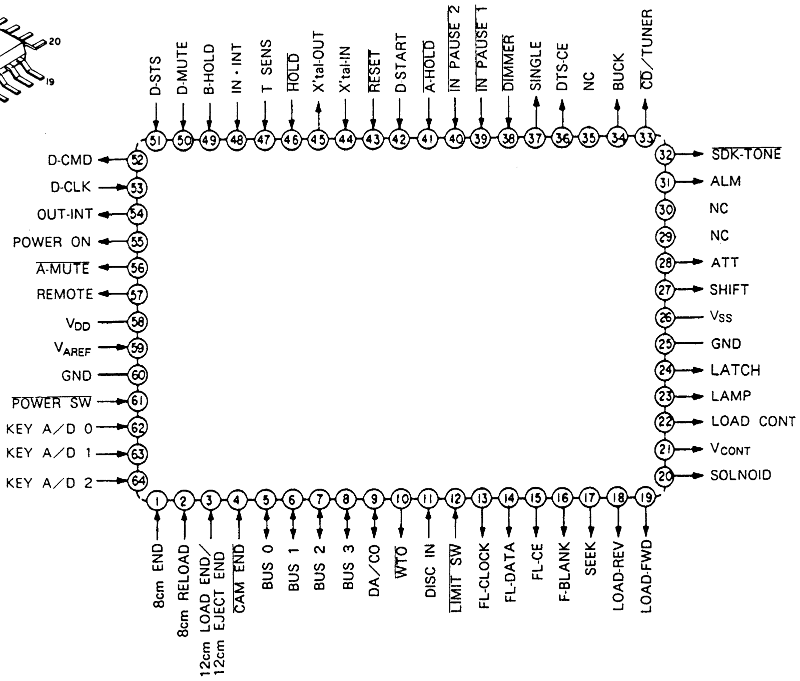
BU4052BF : IC407



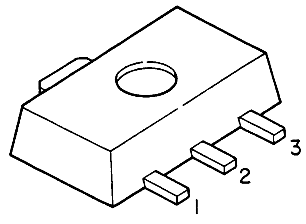

VDD
BINARY TO 1of4
DECODER WITH INHIBIT
LEVEL
CONVER
-TER
16 VDD
10 A
9 B
8 VSS
7 VEE
6 INH
12 X0
14 X1
15 X2
11 X3
1 Y0
5 Y1
2 Y2
4 Y3
13
3
X
Y

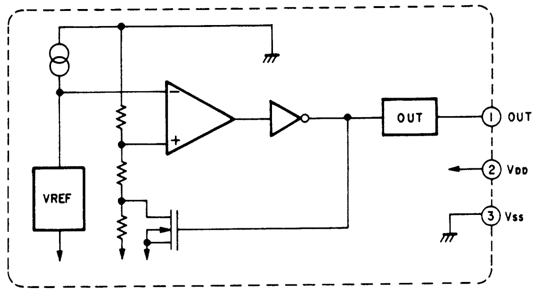
15263W01
25914W01 : IC601


33
32
20
19
51
52
64
1

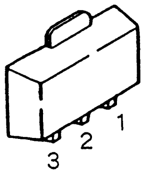

D-STS
D-MUTE
B-HOLD
IN · INT
T SENS
HOLD
X'tal-OUT
X'tal-IN
RESET
D-START
A-HOLD
IN PAUSE 2
IN PAUSE 1
DIMMER
SINGLE
DTS-CE
NC
BUCK
CD/TUNER
51
50
49
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
D-CMD 52
D-CLK 53
OUT-INT 54
POWER ON 55
A-MUTE 56
REMOTE 57
VDD 58
VAREF 59
GND 60
POWER SW 61
KEY A/D 0 62
KEY A/D 1 63
KEY A/D 2 64
32 SDK-TONE
31 ALM
30 NC
29 NC
28 ATT
27 SHIFT
26 Vss
25 GND
24 LATCH
23 LAMP
22 LOAD CONT
21 VCONT
20 SOLNOID
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
8cm END
8cm RELOAD
12cm LOAD END/
12cm EJECT END
CAM END
BUS 0
BUS 1
BUS 2
BUS 3
DA/CO
WTO
DISC IN
LIMIT SW
FL-CLOCK
FL-DATA
FL-CE
F-BLANK
SEEK
LOAD-REV
LOAD-FWD

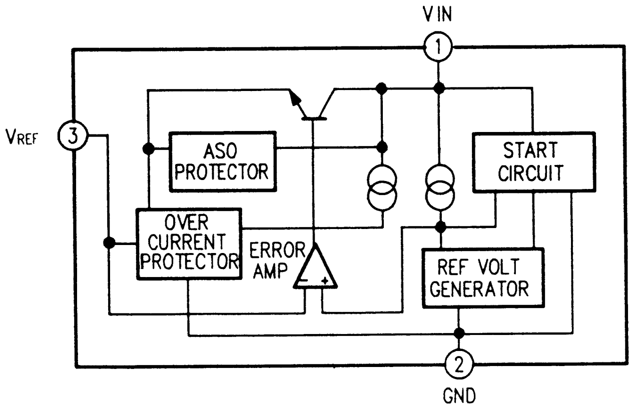
S-8054ALB : IC602



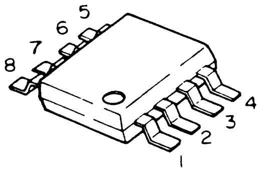

VREF
OUT
1 OUT
2 VDD
3 Vss

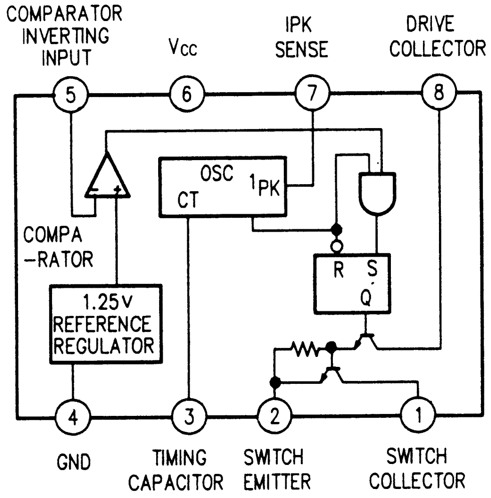
M5236ML : IC603



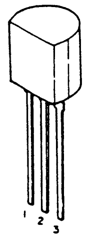

VIN
1
VREF
3
ASO PROTECTOR
START CIRCUIT
OVER CURRENT PROTECTOR
ERROR AMP
REF VOLT GENERATOR
2
GND

MC34063M : IC605

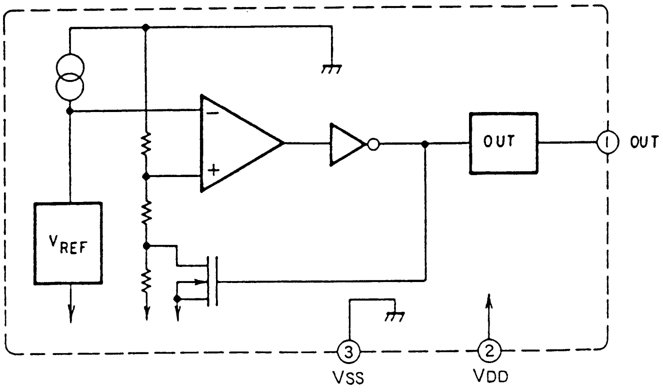



COMPARATOR INVERTING INPUT
Vcc
IPK SENSE
DRIVE COLLECTOR
5
6
7
8
OSC
CT
IPK
COMPA-RATOR
1.25V REFERENCE REGULATOR
R
S
Q
4
3
2
1
GND
TIMING CAPACITOR
SWITCH EMITTER
SWITCH COLLECTOR

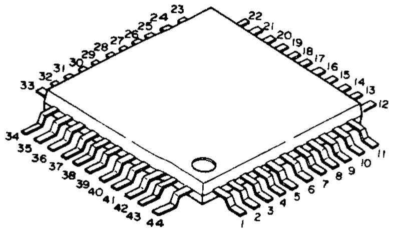
S-8052ALR : IC606

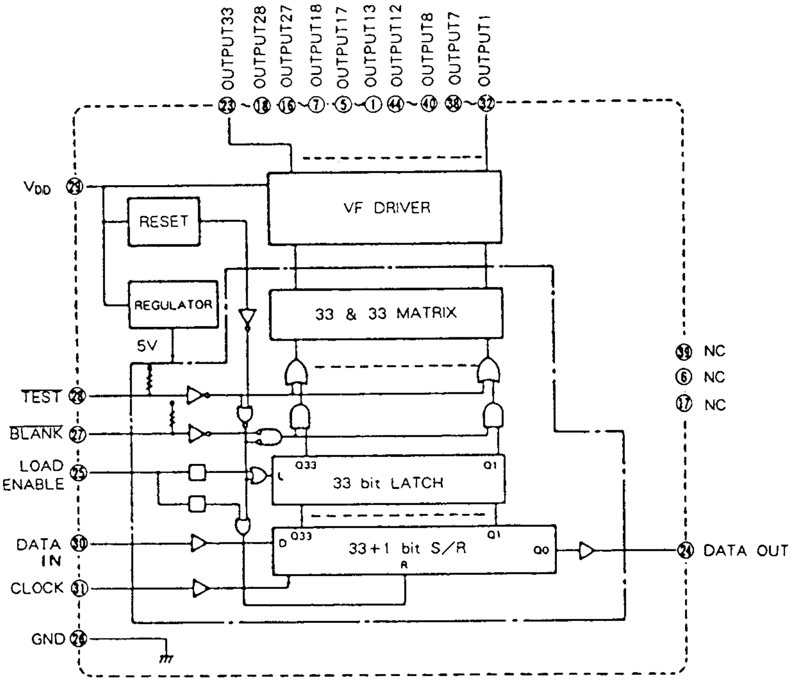


1.OUT
2.VDD
3.Vss


VREF
OUT
1
OUT
3
VSS
2
VDD

MSC1149GS : IC901, 902

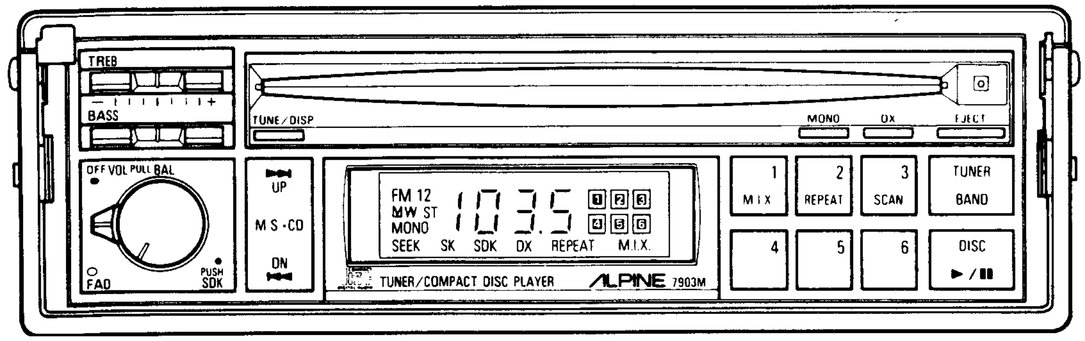

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44


OUTPUT33
OUTPUT28
OUTPUT27
OUTPUT18
OUTPUT17
OUTPUT13
OUTPUT12
OUTPUT8
OUTPUT7
OUTPUT1
㉓~⑱ ⑯~⑦ ⑤~① ㊹~㊵ ㊳~㉜
VDD ㉙
RESET
REGULATOR
5V
VF DRIVER
33 & 33 MATRIX
TEST ㉘
BLANK ㉗
LOAD ENABLE ㉕
DATA IN ㉚
CLOCK ㉛
GND ㉖
L
Q33
Q1
33 bit LATCH
D
Q33
Q1
33+1 bit S/R
R
Q0
㉔ DATA OUT
㊴ NC
⑥ NC
⑰ NC

ALPINE SERVICE MANUAL

Digital FM/MW/LW Compact Disc Player

●For the CD player mechanism parts of this model, refer to the DP-S Series Service Manual (Part No. 68P13315W01).


TREB
BASS
TUNE/DISP
MONO
DX
EJECT
OFF VOL PULL BAL
FAD
PUSH SDK
UP
M S·CD
DN
FM 12
MW ST
MONO
103.5
SEEK SK SDK DX REPEAT M.I.X.
TUNER/COMPACT DISC PLAYER
ALPINE 7903M
1 MIX
2 REPEAT
3 SCAN
TUNER BAND
4
5
6
DISC ►/❚❚

7903M

Contents

Specifications .... 3 to 4
Controls and Indicators .... 5 to 6
Features 6
Connections .... 7 to 9
Operation .... 9 to 12
Proper Care of Your Disc 13
Important Notice 14
Precautions .... 14 to 15
Disassembly Instructions .... 16 to 17
Adjustment Procedures .... 18 to 19
Adjustment Locations 20
Description of IC Terminals .... 21 to 30
Explanation for Circuit Operation .... 31 to 34
Tuner Schematic Diagram 35
Block Diagram 36
Parts Layout on P. C. Boards and Wiring Diagram (1/2) .... 37 to 39
Parts Layout on P. C. Boards and Wiring Diagram (2/2) .... 40 to 42
Schematic Diagram (1/3) .... 43 to 45
Schematic Diagram (2/3) .... 46 to 48
Schematic Diagram (3/3) .... 49 to 51
Electrical Parts List .... 52 to 60
Cabinet Assembly Parts List 61
Exploded View (Cabinet) .... 62 to 63
Packing Assembly Parts List 64
Packing Method View 64
Semi-conductor Lead Identifications .... 65 to 73

Specifications

CD SECTION

System	Optical (Compact Disc System)
Quantizing Bit Number	16 Bit Linear System
Channels	2 Channels
Distortion (1kHz)	0.08%
Frequency Response (1kHz)	20Hz : ±3dB 100Hz~10kHz : ±2dB 20kHz : ±4dB
S/N Ratio	80dB
Separation	70dB (1kHz)
Noise Level	0.1mV
Currents (at play)	1.2A
Tone Control Effect	Bass : 100Hz ±14dB±3dB Treble : 10kHz±13dB±3dB

FM SECTION

Intermediate Frequency	107±0.1MHz
Frequency Range	87.5~108MHz
Usable Sensitivity (Stereo THD 3%)	17.2dBf
Limiting Sensitivity (98.1MHz)	$14.2\pm{}^{3}_{5}$dBf
Signal to Noise Ratio (Stereo 98.1MHz)	48dB
Image Rejection (106.1MHz)	40dB
IF Rejection (98.1MHz)	60dB
Distortion (Input 1mV.98.1MHz)	1%
Frequency Response (400Hz)	100Hz : 0±3dB 10kHz : −12±3dB
Stereo Separation (1,000Hz)	25dB
SK Sensitivity (98.1MHz)	25.2dBf

MW SECTION

Intermediate Frequency	450±5kHz
Frequency Range	531~1,602kHz
Sensitivity (20dB S/N, 999kHz)	46.2dBf
Signal to Noise Ratio (999kHz)	44dB
Image Rejection (1,404kHz)	50dB
IF Rejection (603kHz)	60dB
Distortion (999kHz)	1%
Frequency Response (400Hz)	100Hz : −3±4dB 4kHz : −12±6dB

LW SECTION

Intermediate Frequency	450±5kHz
Frequency Range	153~281kHz
Sensitivity (20dB S/N, 218kHz)	52.2dBf
Signal to Noise Ratio (218kHz)	40dB
Image Rejection (272kHz)	40dB
IF Rejection (218kHz)	50dB
Distortion (218kHz)	2%
Frequency Response (400Hz)	100Hz : −3±3dB 4kHz : −12±6dB

GENERAL

Power Supply	14V DC
Output Voltage/Impedance	1.2V/10k ohm
Semiconductors	37 IC'S, 82 Transistors, 33 Diodes, 17 Zener Diodes
Dimensions	Nose : 178 (W) × 50 (H) × 15 (D) mm Chassis : 178 (W) × 50 (H) × 155 (D) mm
Weight	1.7kg

COMPACT DISC (Common)

Track Pitch	1.6 μm
Modulation Frequency	44.1kHz
Transfer Rate	4.3218Mbit/sec
Dimensions	120 × 1.2mm

NOTE : Due to continuing product improvement, specifications and designs are subject to change without notice.

CONTROLS AND INDICATORS

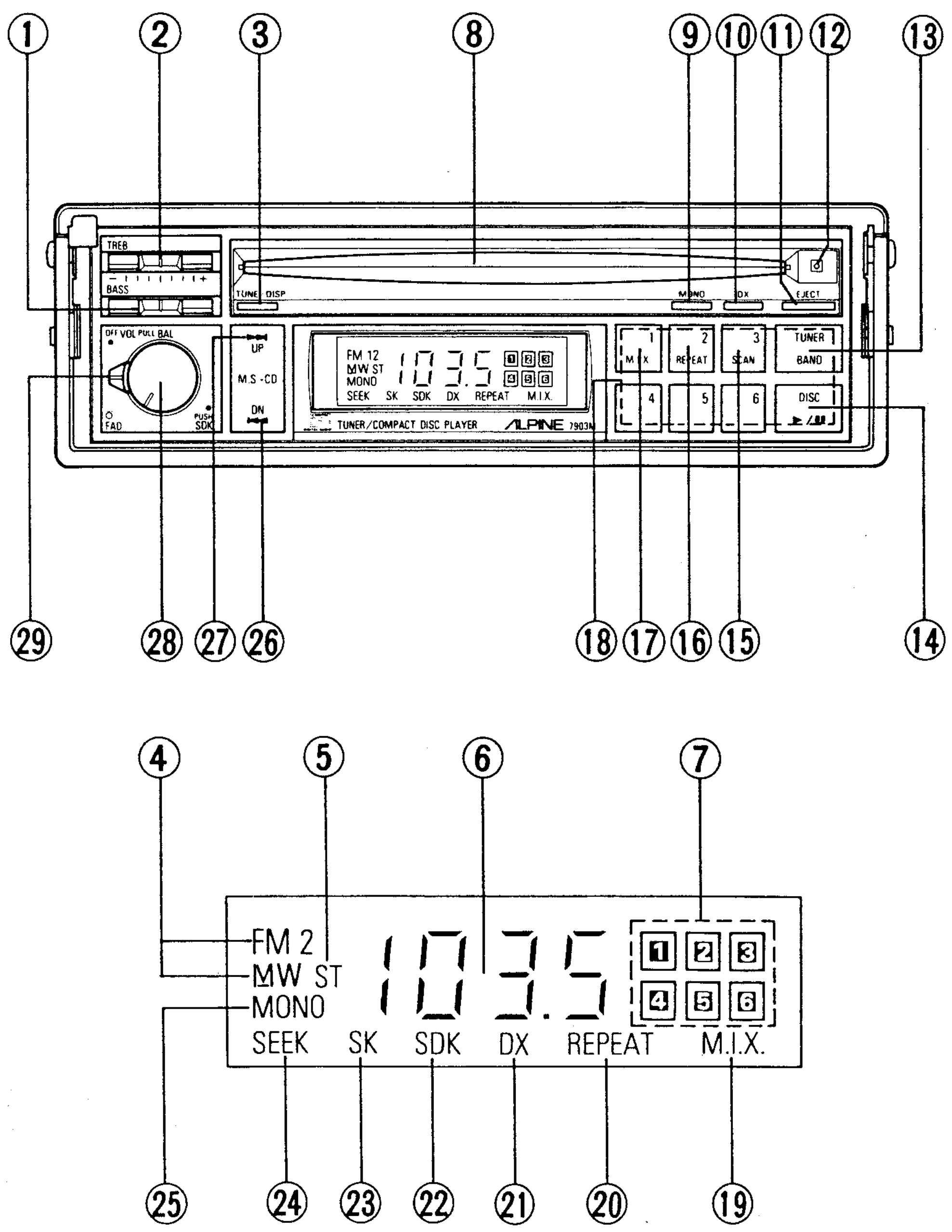

①
②
③
⑧
⑨
⑩
⑪
⑫
⑬
TREB
BASS
TUNE DISP
MONO
DX
EJECT
OFF VOL PULL BAL
FAD
PUSH SDK
UP
M.S.-CD
DN
FM 12
MW ST
MONO
103.5
SEEK SK SDK DX REPEAT M.I.X.
TUNER/COMPACT DISC PLAYER
ALPINE 7903M
1
2
3
M.I.X
REPEAT
SCAN
4
5
6
TUNER
BAND
DISC
㉙
㉘
㉗
㉖
⑱
⑰
⑯
⑮
⑭
④
⑤
⑥
⑦
FM 2
MW ST
MONO
103.5
1
2
3
4
5
6
SEEK
SK
SDK
DX
REPEAT
M.I.X.
㉕
㉔
㉓
㉒
㉑
⑳
⑲

Fig. 1/Abb. 1

CONTROLS AND INDICATORS

Refer to Fig. 1 on page 3.

① **BASS Control**
② **TREBle Control**
③ **TUNE/DISP Switch**
④ **BAND Indicators**
⑤ **FM STereo Reception Indicator**

⑥ **Digital Display**
⑦ **Preset Address Indicators**
⑧ **Disc Slot**
⑨ **MONO Switch**
⑩ **DX (Local/distance) Switch**

⑪ **EJECT (RELOAD) Button**
⑫ **Reset Switch**
⑬ **TUNER/BAND Button**
⑭ **DISC (PLAY/PAUSE) Button (▶ / ıı)**
⑮ **SCAN Button**

⑯ **REPEAT Button**
⑰ **M.I.X. Button**
⑱ **Station Preset Buttons**
⑲ **M.I.X. Indicator**
⑳ **REPEAT Indicator**

㉑ **DX (Distance) Indicator**
㉒ **SDK Indicator**
㉓ **SK Indicator**
㉔ **SEEK Tuning Indicator**
㉕ **MONO Indicator**

㉖ **M.S. · CD DowN (⏮) Switch**
㉗ **M.S. · CD UP (⏭) Switch**
㉘ **Power Switch/VOLume Control/BALance Control (PULL)/SDK Switch (PUSH)**
㉙ **FADer Control**

FEATURES

- **FULL FRONT DIN™**
- **QUICK RELEASE BRACKET (Q.R.B.)**
  Alpine's exclusive Q.R.B. design allows for easy removal and insertion of the 79 while still maintaining the unit's memory. The 7903M can be removed and take the owner for theft prevention. This Q.R.B. bracket is compatible with all Pre-Ai Alpine Q.R.B. units that have RCA Connectors.

‹COMPACT DISC PLAYER FEATURES›

- **POWER LOADING/SELF LOADING**
  It gently pulls the partially inserted compact disc into the play position and begir playback.
- **MUSIC SENSOR UP/DOWN**
  For locating the beginning of the next track (up), or the track currently in playbac (down).
- **FAST FORWARD/FAST BACKWARD**
- **M.I.X.**
  When the M.I.X. switch is pressed, the microprocessor inside the 7903M will ra select tracks for playback. After all tracks have been played, the M.I.X. feature into Repeat Mode and begin again.
- **REPEAT**
- **3 INCH DISCS**
  This unit plays 3-inch compact discs without using an adaptor ring.
- **4-TIMES OVERSAMPLING DIGITAL FILTER**
- **EJECT AUTO-LOCK**
  This locks the laser mechanism when a disc is ejected.
- **DISC SCAN**
  Locates the beginning of each track and plays 10 seconds.
- **ELECTRONIC EJECT/RELOAD**
- **PAUSE**

‹RADIO FEATURES›

- **T-10 II TUNER**
  Alpine's premier tuner — utilizes a number of innovations to ensure stable, nois FM reception in both strong and weak signal areas.
- **ETR/PLL DIGITAL FREQUENCY SYNTHESIZER**
- **DUAL PRE AMP OUTPUTS**
  This allows you to easily expand your system by providing Front and Rear Prear Outputs and a Pre-Amp Fader.
- **LITETOUCH™ 24-STATION PRESETS**
  FM1: 6, FM2: 6, MW: 6, LW: 6
- **36 DETENT VOLUME CONTROL**
- **SEPARATE BASS & TREBLE CONTROL**
- **MEMORY LOGIC ELECTRONICS**
- **POWER ANTENNA LEAD**
- **AUTO TUNE SELECT SWITCH**
- **BALANCE CONTROL**
- **STEREO INDICATOR**
- **PRESET ADDRESS**
- **AUTO UP/DOWN SE**
- **STEREO/MONO SW**
- **LO/DX (SEEK SENSI**
- **DIGITAL DISPLAY**

CONTROLS AND INDICATORS

on page 3.

ntrol
ontrol
SP Switch
dicators
o Reception Indicator

splay
ddress Indicators

witch
l/distance) Switch

ELOAD) Button
itch
AND Button
AY/PAUSE) Button (▶ / ❚❚)
tton

Button
tton
reset Buttons
licator
ndicator

nce) Indicator
cator
tor
ning Indicator
dicator

DowN (⏮) Switch
UP (⏭) Switch
witch/VOLume Control/BALance Control (PULL)/SDK Switch (PUSH)
ntrol

FEATURES

- **FULL FRONT DIN™**
- **QUICK RELEASE BRACKET (Q.R.B.)**
  Alpine's exclusive Q.R.B. design allows for easy removal and insertion of the 7903M while still maintaining the unit's memory. The 7903M can be removed and taken with the owner for theft prevention. This Q.R.B. bracket is compatible with all Pre-Amp Alpine Q.R.B. units that have RCA Connectors.

‹COMPACT DISC PLAYER FEATURES›

- **POWER LOADING/SELF LOADING**
  It gently pulls the partially inserted compact disc into the play position and begins playback.
- **MUSIC SENSOR UP/DOWN**
  For locating the beginning of the next track (up), or the track currently in playback (down).
- **FAST FORWARD/FAST BACKWARD**
- **M.I.X.**
  When the M.I.X. switch is pressed, the microprocessor inside the 7903M will randomly select tracks for playback. After all tracks have been played, the M.I.X. feature will go into Repeat Mode and begin again.
- **REPEAT**
- **3 INCH DISCS**
  This unit plays 3-inch compact discs without using an adaptor ring.
- **4-TIMES OVERSAMPLING DIGITAL FILTER**
- **EJECT AUTO-LOCK**
  This locks the laser mechanism when a disc is ejected.
- **DISC SCAN**
  Locates the beginning of each track and plays 10 seconds.
- **ELECTRONIC EJECT/RELOAD**
- **PAUSE**

‹RADIO FEATURES›

- **T-10 II TUNER**
  Alpine's premier tuner — utilizes a number of innovations to ensure stable, noise-free FM reception in both strong and weak signal areas.
- **ETR/PLL DIGITAL FREQUENCY SYNTHESIZER**
- **DUAL PRE AMP OUTPUTS**
  This allows you to easily expand your system by providing Front and Rear Preamp Outputs and a Pre-Amp Fader.
- **LITETOUCH™ 24-STATION PRESETS**
  FM1: 6, FM2: 6, MW: 6, LW: 6
- **36 DETENT VOLUME CONTROL**
- **SEPARATE BASS & TREBLE CONTROL**
- **MEMORY LOGIC ELECTRONICS**
- **POWER ANTENNA LEAD**
- **AUTO TUNE SELECT SWITCH**
- **BALANCE CONTROL**
- **STEREO INDICATOR**
- **PRESET ADDRESS**
- **AUTO UP/DOWN SEEK**
- **STEREO/MONO SWITCH**
- **LO/DX (SEEK SENSE)**
- **DIGITAL DISPLAY**

CONNECTIONS

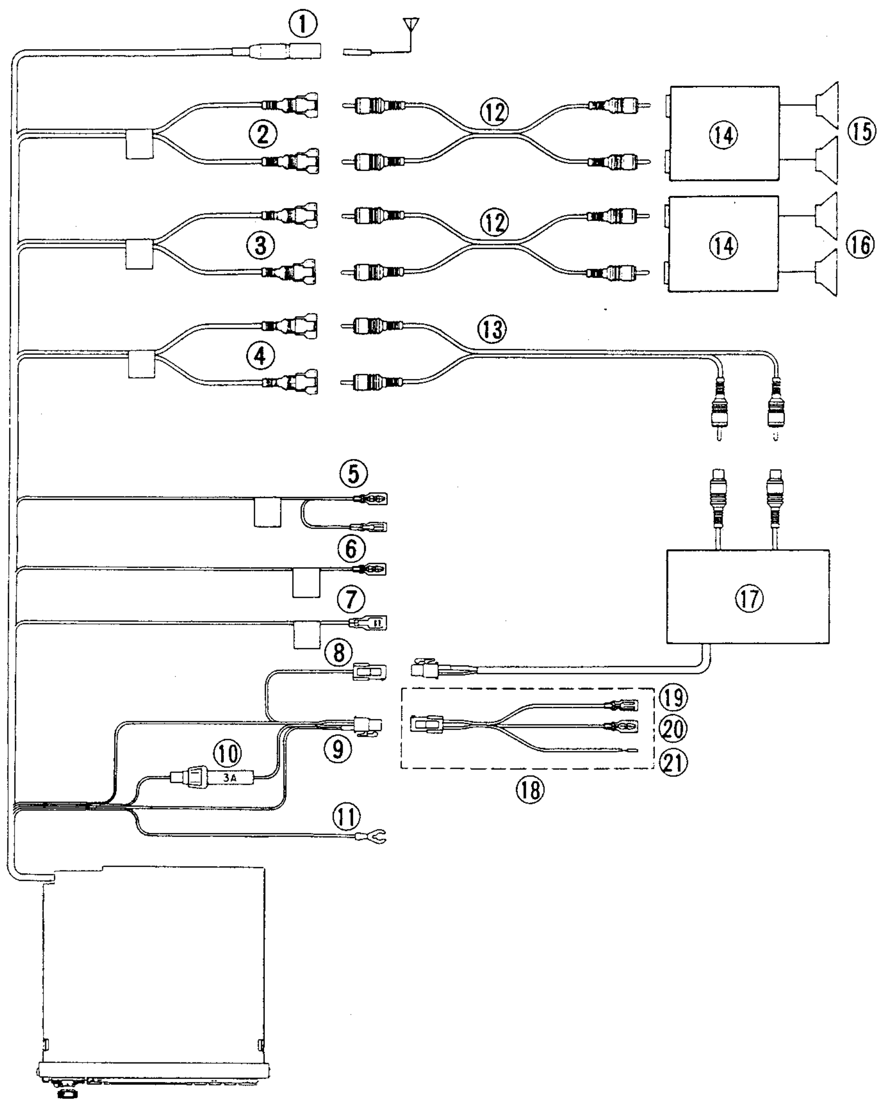


Fig. 2/Abb. 2

CONNECTIONS

Refer to Fig. 2 on page 4.

This unit is designed for 12-volt DC negative ground operation. Check to be sure that your vehicle has this type of system before connecting the power cable.

① **Antenna Receptacle**

② **Front Output RCA Connectors (Labeled LINE OUT FRONT)**
RED is Right and WHITE is Left.

③ **Rear Output RCA Connectors (Labeled LINE OUT REAR)**
RED is Right and WHITE is Left.

④ **Input RCA Connectors (Labeled LINE IN)**
RED is Right and WHITE is Left.

NOTE: The 7903M uses female RCA type connectors that are designed to connect to another unit (source unit, signal processor or amplifier) having RCA connectors. You may need an adaptor to convert the other unit to this format. If so, please contact your authorized Alpine dealer for assistance.

⑤ **Dimmer Control Lead (White/Blue)**
This lead is for connection to a rheostat such as the dashboard light dimmer in your vehicle. Applying (+)12V to this lead causes the maximum dimming. Varying the voltage controls the brightness of the display. This allows you to dim the unit's display with the dashboard lights.

⑥ **Audio Interrupt Out Lead (Pink/White)**
Connect to the Audio Interrupt In Lead of another unit that has the Audio Interrupt In Lead.

⑦ **Power Antenna Lead (Blue)**
When loaded with a power antenna, connect to the +B terminal of the power antenna.

⑧ **Aux. Power Connector**
Connect this to the matching connector on another Alpine source unit or an Alpine adaptor.

⑨ **Main Power Connector**
Connect to Power Wiring Harness (item 18).

⑩ **Fuse Holder (3A)**

⑪ **Ground Lead**
Connect this lead to a good chassis ground on the vehicle. Make sure the connection is made to bare metal and is securely fastened using the sheet metal screw provide.

⑫ **RCA Extension Cable (Option)**
Your authorized Alpine dealer also has high performance RCA extension cables.

⑬ **RCA Extension Cable (Included)**

⑭ **RCA Input Jacks of Amp. Unit**

⑮ **Front Speakers (Left/Right)**

⑯ **Rear Speakers (Left/Right)**

⑰ **Other ALPINE Head Unit**

⑱ **Power Wiring Harness (Included)**
Connect the BLUE/WHITE, RED, and YELLOW leads as described below.

⑲ **Remote ON Lead (Blue/White)**
Connect this lead to the remote turn-on lead of your amplifier or signal processor.

⑳ **Switched Power Lead (Ignition) (Red)**
Connect this lead to an open terminal on the vehicle's fuse box or another unused power source which provides (+)12V only when the ignition is turned on or in the accessory position.

CAUTION: You must be very careful when connecting wires to the vehicle's electrical system. Be sure you do not interface leads that are being used for factory components in the vehicle (like an on-board computer). When making connections at the fuse box, make sure there is an appropriate value fuse on the circuit you plan to use. Failure to do so may result in damage to the unit and/or the vehicle.

CONNECTIONS

㉑ **Battery Lead (Yellow)**
Connect this lead to the positive (+) post of the vehicle's battery.

NOTE: When the 7903M is connected to another Alpine head unit, follow the procedures below for changing modes of operation between head units.

1. If combined with an Alpine FM/MW/LW Cassette or DAT player with an independent tuner mode select button, any playback mode can be selected by pressing the desired function switch on any unit; ie; CD, cassette or tuner, etc.
2. If combined with an Alpine cassette radio that does not have an independent tuner mode select switch, the CD player may be paused by pressing the DISC ▶ / ❚❚ button on the CD player. Playback of the cassette or radio will resume -- whichever was operating before CD play began. To resume CD playback, press the DISC ▶ / ❚❚ button.

OPERATION

● BASIC OPERATION

Initial System Set-up

When operating for the very first time after installation or replacement of the car battery, press the Reset Switch ⑫ with a ball-point pen or other pointed object.

Power Switching and Volume Control

Rotating the Power Switch ㉘ clockwise turns power ON and continuously incre
volume. Rotating the control counterclockwise will continuously decrease the volu
and turn the Power Off.

Note: The noise level on compact discs is much lower than on analog-type re
tapes; therefore, when inserting a disc, keep the volume control turned counterclockwise, then adjust volume by gradually turning the control clockwise once playback begins.
Do not turn clockwise abruptly as the excessive power could damage t
speakers.

Balance Control

Pull on the Volume Control ㉘ and rotate to balance between left and right speak

Fader Control

Rotate the Fader Control ㉙ for your desired front to rear volume balance.

Separate Bass and Treble Controls (①, ②)

Slide these controls to the right to increase, and to the left to decrease the level
or Treble.

Function Switching

1. Tuner Mode
   With no disc loaded, the unit is normally in the tuner mode. Press the TUNER
   ⑬ to switch from CD to Radio.

2. CD Mode
   When a disc is loaded, the unit automatically goes into the CD mode. Press th
   ▶ / ❚❚ button ⑭ to switch from Radio to CD.

Cautions During CD Playback

Playing a disc while driving on a very bumpy road may result in skips but this wi
scratch the disc or damage the player.

Notes:
1. Your player accepts only one disc at a time for playback. Do not at
   load more than one disc.
2. Make sure the label side is facing up, when you insert the disc. Yo
   player will automatically eject any disc that is inserted incorrectly. I
   player continues to eject a correctly inserted disc, push the Reset S
   with a pointed object such as a ballpoint pen.
3. You can play 3-inch CDs in this player without using an adaptor rin
4. Make sure your discs are labeled as shown below:

COMPACT
disc
DIGITAL AUDIO

CONNECTIONS

ry Lead (Yellow)

ct this lead to the positive (+) post of the vehicle's battery.

Vhen the 7903M is connected to another Alpine head unit, follow the procedures elow for changing modes of operation between head units.

1. If combined with an Alpine FM/MW/LW Cassette or DAT player with an independent tuner mode select button, any playback mode can be selected by pressing the desired function switch on any unit; ie; CD, cassette or tuner, etc.
2. If combined with an Alpine cassette radio that does not have an independent tuner mode select switch, the CD player may be paused by pressing the DISC ▶ / ▮▮ button on the CD player. Playback of the cassette or radio will resume -- whichever was operating before CD play began. To resume CD playback, press the DISC ▶ / ▮▮ button.

OPERATION

● BASIC OPERATION

Initial System Set-up

When operating for the very first time after installation or replacement of the car battery, press the Reset Switch ⑫ with a ball-point pen or other pointed object.

Power Switching and Volume Control

Rotating the Power Switch ㉘ clockwise turns power ON and continuously increases the volume. Rotating the control counterclockwise will continuously decrease the volume, and turn the Power Off.

Note: The noise level on compact discs is much lower than on analog-type records or tapes; therefore, when inserting a disc, keep the volume control turned fully counterclockwise, then adjust volume by gradually turning the control clockwise once playback begins.

Do not turn clockwise abruptly as the excessive power could damage the speakers.

Balance Control

Pull on the Volume Control ㉘ and rotate to balance between left and right speakers.

Fader Control

Rotate the Fader Control ㉙ for your desired front to rear volume balance.

Separate Bass and Treble Controls (①, ②)

Slide these controls to the right to increase, and to the left to decrease the level of Bass or Treble.

Function Switching

1. Tuner Mode
   With no disc loaded, the unit is normally in the tuner mode. Press the TUNER button ⑬ to switch from CD to Radio.

2. CD Mode
   When a disc is loaded, the unit automatically goes into the CD mode. Press the DISC ▶ / ▮▮ button ⑭ to switch from Radio to CD.

Cautions During CD Playback

Playing a disc while driving on a very bumpy road may result in skips but this will not scratch the disc or damage the player.

Notes:
1. Your player accepts only one disc at a time for playback. Do not attempt to load more than one disc.
2. Make sure the label side is facing up, when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset Switch ⑫ with a pointed object such as a ballpoint pen.
3. You can play 3-inch CDs in this player without using an adaptor ring.
4. Make sure your discs are labeled as shown below:

COMPACT
disc
DIGITAL AUDIO

OPERATION

● RADIO OPERATION

If the unit is not in the Radio mode, press the TUNER/BAND button ⑬.

Tuning Band Selection

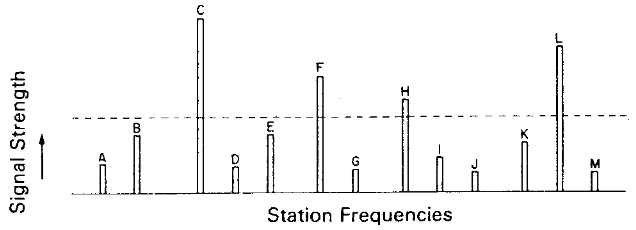
Press the BAND Button ⑬ to select the desired tuning band. The Band Indicator ④ shows your selection.

Local/Distance (DX) Seek Sensitivity for FM, MW and LW

You can select the radio seek sensitivity, local or distance (DX), by pressing the DX (distance) Switch ⑩.

In the Local mode, with no DX indication ㉑, the radio tunes in only strong stations (C, F, H and L in the illustration).

In the distance mode, with DX indication ㉑, the radio tunes in both strong and weak stations (from A to M in the illustration).



FM Stereo/Mono Switching

You can select between the Auto Switching or Monaural only for FM reception by pressing the MONO switch ⑨. In the Auto Switching mode, you can receive stereo broadcasts in STereo and monaural broadcasts in MONO. The STereo or MONO indicator shows you which one is being received. In the MONO mode, you will receive the broadcast in monaural only, even if the broadcast is in stereo. The MONO only mode quiets the noisy stereo signal of weaker broadcasts. The STereo indicator will not appear while the monaural mode is selected.

Manual TUNING

1. For Manual Tuning, press the TUNE switch ③ until it's illumination is green.
2. To select the tuning band, press the BAND button ⑬. The Band indicator ④ in the display will illuminate.
3. To tune higher frequencies, press the M.S. · CD ▶▶| switch (UP) ㉗. To tune lower frequencies, press the M.S. · CD |◀◀ switch (DowN) ㉖.

Auto SEEK Tuning

1. For Auto SEEK Tuning, press the TUNE switch ③ until it's illumination is amber.
2. Select the tuning band with the BAND button ⑬.
3. Press the ▶▶| (UP) ㉗ or the |◀◀ (DowN) ㉖ switch. The unit automatically tunes to the next higher or lower frequency and locks on that station.

Preset Memory Programming

Follow the instructions below to enter stations into preset memory:

1. Select the tuning band (FM1, FM2, MW, LW) ④ with the TUNER/BAND button ⑬.
2. Tune in your desired station using Manual or Auto SEEK tuning.
3. Press the Preset button number 1 ⑱ for more than two seconds. The Preset Address indicator ⑦ in the display will begin to blink. Press Preset button number 1 again while the indicator is blinking.
4. The frequency you selected will be placed into the Preset Memory number 1 and will appear in the display.
   Note: If a preset memory has already been set in the same address, it will be cleared and the new station will be memorized.
5. Follow steps 2-3 for the remaining presets (2-6). This procedure should be followed for FM 1, FM 2, MW and LW.

Preset Tuning

After the preset stations have been memorized, you can tune in your desired station with just a touch of a button.

1. Select the tuning band (FM1, FM2, MW or LW) with the BAND button ⑬.
2. Press one of the preset buttons ⑱ and the number of that preset will illuminate in the preset address display. The tuner will be tuned to the frequency programmed in that preset location.

Traffic Information Receiving

This model is equipped with traffic information receiving apparatus to be used in West Germany where the traffic information is broadcast in FM. The following is how to use this unit to receive traffic information broadcasting.

1. Select FM position.
2. Depress the SDK switch ㉘ and tune to a station. If the station is a traffic information station, the SK indicator ㉓ will glow and show the reception of a broadcast from a traffic information station.
   NOTE: SK Indicator
   When SK signal is received irrespective of the SDK position, the SK indicator will illuminate.
3. In the SDK mode, stations other than traffic information stations are muted and cut out. Therefore, it is easy to select a traffic information station.
4. As the signal of the tuned traffic information station becomes weak, the SK indicator will extinguish. Then after the lapse of 25 seconds, a rhythmical alarm will sound to urge retuning to another stronger station. If the reception of further traffic information is required, tune in the desired traffic information station. When received, the alarm will stop and the SK indicator illuminates. Since the alarm will continue if no signals from any other traffic stations can be received, release SDK switch for reception of normal broadcasting.
5. When the unit is playing a CD with the SDK switch pushed in and tuned to a traffic information station, the CD play is interrupted and changed to FM radio if the pre-tuned station begins a traffic information message. When the message is over, the unit reverts to CD play automatically.
6. Even if the VOLUME control is set to the minimum position, the volume of the traffic information will be automatically adjusted to proper level. After the message, the sound volume returns to the previously adjusted level.
7. If traffic information reception is no longer necessary, release SDK switch for normal radio reception.

NOTE: When the SDK switch is pressed and there is no SK signal, ALARM will sound after the lapse of 25 seconds. Press the SDK switch again to stop it.

NOTE: This unit has a special volume control on the left side of the unit for adjusting the volume level for SDK reception and the alarm which will sound when there is no SK signal in the SDK mode. Set the volume control ㉘ to the minimum level position, and adjust the special volume control on the left side of the unit to your desired level with a screwdriver.

● CD OPERATION

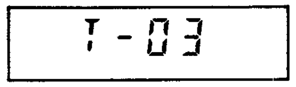
If the unit is not in the CD mode, press the DISC button ⑭.

Load

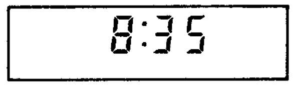
1. Insert a disc into the DISC slot ⑧. When the disc is halfway in, the power loading system will pull the disc in and guide it into the play position.
2. If the disc is left at least halfway in, press the DISC button ⑭ or press the disc edge lightly to move it forward. "LOAd" will show in the display while loading.
3. When the unit is in the CD mode, the Digital Display ⑥ shows " T-00 " for a second while the data on the disc is read.
4. When a disc is loaded or ejected while the unit is in the tuner mode, it will automatically switch to the CD mode.

Track/Elapsed Time Display Switching

Press the Display Switch ③ for the Track Number being played and the Elapsed Time for the current track to be shown in the Digital Display ⑥. See below.



Track Mode



Time Mode

Normal Play (Repeat All)

1. Load the Disc.
2. The Digital Display ⑥ will show " T-00 " for a second, then " T-01 " will be displayed and the first track on the disc will begin playback.
3. After the last track on the disc is played back, the pickup will return to the beginning of the disc and begin playback from that point.

Disc Eject and Reload

Press the EJECT button ⑪. The disc will come halfway out. If the eject status is maintained more than 15 seconds in case of 5-inch disc the self loading system will be automatically actuated and the disc will be reloaded into the mechanism and the player will be set to PAUSE mode.

Press the DISC ▶ / ❚❚ button ⑭ to resume playback. When using 3-inch discs, the eject status continues until the disc is pushed back in.

Pause

Press the DISC ▶ / ❚❚ button ⑭ to hold playback temporarily. The playback stops, but the disc remains inside the player. To resume playback, press the DISC ▶ / ❚❚ button ⑭ again.

Music Sensor (Skip)

This feature allows you to access the beginning of your musical track selection simply and quickly. It is functional in the play or pause mode. The Digital Display ⑥ shows the track number you have selected.

* To advance to the next track on the disc, press the ⏭ side of the M.S. · CD switch ㉗.
   1. Playback stops, the pickup moves up to the beginning of the next track. That track number appears in the Digital Display ⑥.
   2. Playback begins immediately.
   3. If you wish to access a track further ahead on the disc, continue pressing the ⏭ side of the M.S. · CD switch ㉗ until you reach the track of your choice.

* To replay the track that is currently playing, press the ⏮ side of the M.S. · CD switch ㉖.
   1. Playback stops, the pickup moves back to the beginning of the current track. The track number in the Digital Display ⑥ remains the same.
   2. Playback begins immediately from the beginning of the track.
   3. If you access a track further towards the beginning of the disc, continue pressing the ⏮ side of the M.S. · CD switch ㉖ until you reach the track of your choice.

Fast Forward/Fast Backward

The Fast Forward/Fast Backward feature works in both play and pause modes.

1. Press either the M.S. · CD ⏭ ㉗ or the M.S. · CD ⏮ ㉖ switch and hold it for more than 2 seconds.
2. To move the pickup forward rapidly, hold down the M.S. · CD UP ⏭ switch ㉗.
3. To move the pickup backward rapidly, hold down the M.S. · CD DN ⏮ switch ㉖.
4. When the pickup reaches the end of the disc, it automatically returns to the beginning. Playback will then start from the beginning of the disc.

REPEAT (One)

This feature allows you to continuously playback a single track.

1. Press the REPEAT button ⑯.
2. The musical track shown in the Digital Display ⑥ will be played back repeatedly.
3. To defeat the Repeat function, press the REPEAT button a second time.

SCAN

Press this button and the player will playback the first 10 seconds of each track i succession. This function is useful in searching for a specific program ahead on a di Press the SCAN button ⑮ a second time to deactivate this function.

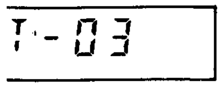
M.I.X. (Random Play)

Depress the M.I.X. button ⑰ while in the CD mode and the musical tracks will be played back in a random sequence generated by the microprocessor. After all the t on the disc have been played back once, the player will begin a new random seque

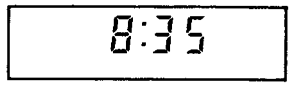
OPERATION

Time Display Switching

play Switch ③ for the Track Number being played and the Elapsed Time
rack to be shown in the Digital Display ⑥. See below.



Track Mode



Time Mode

epeat All)

sc.
isplay ⑥ will show " T-00 " for a second, then " T-01 " will be displayed
track on the disc will begin playback.
t track on the disc is played back, the pickup will return to the beginning of
begin playback from that point.

Reload

CT button ⑪. The disc will come halfway out. If the eject status is
e than 15 seconds in case of 5-inch disc the self loading system will be
tuated and the disc will be reloaded into the mechanism and the player
USE mode.
C ▶ / ❚❚ button ⑭ to resume playback. When using 3-inch discs, the
tinues until the disc is pushed back in.

C ▶ / ❚❚ button ⑭ to hold playback temporarily. The playback stops,
ains inside the player. To resume playback, press the DISC ▶ / ❚❚

Skip)

llows you to access the beginning of your musical track selection simply
functional in the play or pause mode. The Digital Display ⑥ shows the
u have selected.

to the next track on the disc, press the ⏭ side of the M.S. · CD switch

stops, the pickup moves up to the beginning of the next track. That track
appears in the Digital Display ⑥.
begins immediately.
sh to access a track further ahead on the disc, continue pressing the
de of the M.S. · CD switch ㉗ until you reach the track of your choice.

track that is currently playing, press the ⏮ side of the M.S. · CD

stops, the pickup moves back to the beginning of the current track. The
nber in the Digital Display ⑥ remains the same.
begins immediately from the beginning of the track.
cess a track further towards the beginning of the disc, continue pressing
side of the M.S. · CD switch ㉖ until you reach the track of your choice.

ast Backward

ard/Fast Backward feature works in both play and pause modes.
the M.S. · CD ⏭ ㉗ or the M.S. · CD ⏮ ㉖ switch and hold it for more
ds.
pickup forward rapidly, hold down the M.S. · CD UP ⏭ switch ㉗.
pickup backward rapidly, hold down the M.S. · CD DN ⏮ switch ㉖.
kup reaches the end of the disc, it automatically returns to the beginning.
then start from the beginning of the disc.

OPERATION

REPEAT (One)

This feature allows you to continuously playback a single track.

1. Press the REPEAT button ⑯.
2. The musical track shown in the Digital Display ⑥ will be played back repeatedly.
3. To defeat the Repeat function, press the REPEAT button a second time.

SCAN

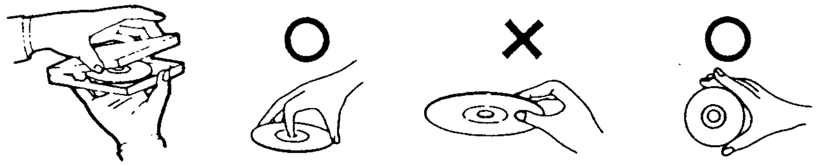
Press this button and the player will playback the first 10 seconds of each track in succession. This function is useful in searching for a specific program ahead on a disc. Press the SCAN button ⑮ a second time to deactivate this function.

M.I.X. (Random Play)

Depress the M.I.X. button ⑰ while in the CD mode and the musical tracks will be played back in a random sequence generated by the microprocessor. After all the tracks on the disc have been played back once, the player will begin a new random sequence.

PROPER CARE OF YOUR DISC

- **Proper Handling**
  Handle your disc as shown. Do not drop the disc while handling. Hold the disc so you will not leave fingerprints on the surface. If the surface is scratched, it may cause the pickup to skip signal tracks. Do not affix tape, paper, or gummed labels on the disc. Do not write on the disc.



- **Keep Your Discs Clean**
  Fingerprints, dust, or soil on the surface could cause the pickup to skip signal tracks. For routine cleaning, wipe the playing surface with a clean, soft cloth from the center of the disc to the outer edge. If the surface is heavily soiled, dampen a clean soft cloth in a solution of mild neutral detergent before cleaning the disc. (Fig. A)
- **Damaged Disc**
  Do not attempt to play cracked, warped, or otherwise damaged discs. Playing a bad disc could severely damage the playback mechanism.
- **Storage**
  When not in use, place your discs in their individual case and store them in a cool place away from the sun, heat, and dust.
- Do not grip or pull out the disc while the disc is being pulled back into the player by automatic Reloading mechanism. (Fig. B)
- Do not pull the unit out from the dash immediately after a disc is inserted or the Eject Button has been pressed. If the unit is pulled out before an operation is completed, the disc will be unstable in the unit and may be damaged.

  Do not attempt to insert a disc into the unit when the unit is out of the dash or the power is off.

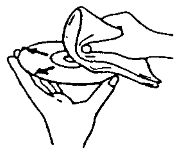


Fig. A

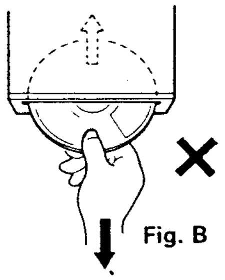


Fig. B

IMPORTANT NOTICE

This compact disc player has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. This equipment generates and uses radio frequency energy, and it must be installed and used properly in accordance with the manufacturer's instructions.

PRECAUTIONS

- When replacing a fuse, make sure the replacement fuse has the same amperage rating (3A) as shown on the fuse holder. If the fuse continues to blow, carefully check all electrical connections for short circuits. It is also a good idea to check the car's voltage regulator. Do not attempt to repair or service the unit yourself. Return the unit to your nearest authorized Alpine Service Station for servicing.
- When your car is parked for a long period of time during the summer or winter, the temperature inside the car fluctuates greatly. Be sure the temperature inside the vehicle is between +60°C (+140°F) and −10°C (14°F) before attempting to play a disc. When the temperature is over 140°F (+ 60°C), the protection circuit functions to stop the CD player, and "— — — H" is displayed.
- When playing 3-inch CD's in the 7903M, do not use an adaptor ring. Adaptor rings may become stuck inside the player and damage the mechanism.
- Be sure to eject the disc from the player before removing the unit from the bracket. The disc must be ejected to activate the EJECT AUTO-LOCK feature. This will protect the laser mechanism while the unit is being transported.

Cautions During Playback

Playing a disc while driving on a very bumpy road may result in skips but this will not scratch the disc or damage the player.

Notes

1. Your player accepts only one disc at a time for playback. Do not attempt to load more than one disc.
2. Make sure the label side is facing up when you insert the disc. Your player will automatically eject any disc that is inserted incorrectly. If the player continues to eject a correctly inserted disc, push the Reset switch ⑫ with a pointed object such as a ballpoint pen.

PRECAUTIONS

Installation Location

The 7903M is designed for in-dash mounting. For optimum performance, make sure the player will not be exposed to:

1. Direct sun and heat
2. High humidity
3. Excessive dust
4. Excessive vibrations

Moisture Condensation

You may notice the playback sound wavering. When this happens, remove the disc from the player and wait about an hour or until the moisture evaporates and the sound becomes normal.

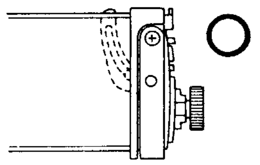
Handling of the Unit When Removed From Quick Release Bracket.

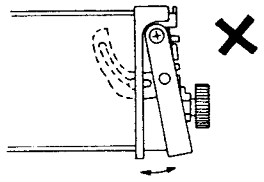
When the 7903M is removed from the in-dash bracket, remember these care tips:

1. Do not drop or apply shock to the unit. It might cause permanent damage.
2. Keep the unit away from:
   - a: Water and moisture
   - b: Direct sun and heat
   - c: Excessive dust
   - d: Strong magnetic fields such as an audio speaker, magnet, or TV.
3. Your authorized Alpine dealer carries an optional carrying case for transporting the player when it is out of the vehicle.

CAUTION:

In the event of road vibration, rapid acceleration, or vehicle collision, this unit may become dislodged from its case unless the handle is fully down. This could result in personal injury to occupants of the vehicle or physical damage to the unit. Please see the illustrations for further information on how to properly secure the handle.



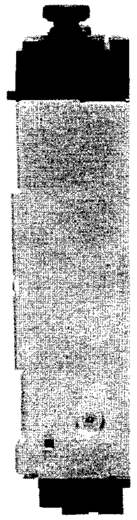


Disas

1. Remov
   (1) After
   fader
   in Fi
   (2) Remo
   1, 2
   The

2. Remov
   (1) After
   screw
   and
   (2) To re
   and l
   with

3. Remov
   (1) After
   screw
   (2) Disc
   C. bc
   To r
   C. bc
   little.
   Give
   the
   4.



PRECAUTIONS

ocation

is designed for in-dash mounting. For optimum performance, make sure
not be exposed to:
ınd heat
ity
lust
ibrations

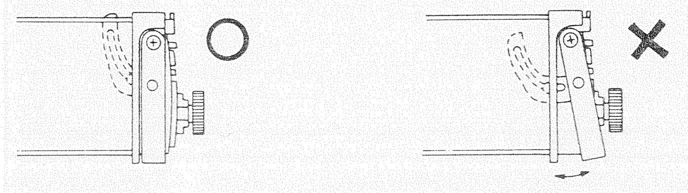
densation

tice the playback sound wavering. When this happens, remove the disc
r and wait about an hour or until the moisture evaporates and the sound
ıal.

he Unit When Removed From Quick Release Bracket.

903M is removed from the in-dash bracket, remember these care tips:
p or apply shock to the unit. It might cause permanent damage.
nit away from:
and moisture
sun and heat
ive dust
magnetic fields such as an audio speaker, magnet, or TV.
ırized Alpine dealer carries an optional carrying case for transporting the
ın it is out of the vehicle.

of road vibration, rapid acceleration, or vehicle collision, this unit may
ged from its case unless the handle is fully down. This could result in
to occupants of the vehicle or physical damage to the unit. Please see the
further information on how to properly secure the handle.



Disassembly Instructions

1. Removal of the nosepiece

(1) After removal of the top cover, remove the volume, fader control and two slide volume knobs as shown in Figure 1.

(2) Remove the six hooks (A) as shown in Figures 1, 2 and 3.
The nosepiece will be removed.

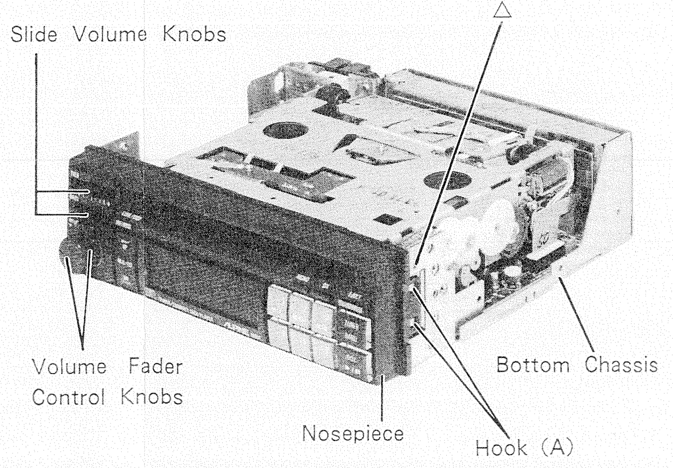

Slide Volume Knobs
△
Volume Fader Control Knobs
Nosepiece
Bottom Chassis
Hook (A)

Figure 1

2. Removal of the bottom chassis

(1) After removal of the nosepiece, remove seven screws marked "△" as shown in Figures 1, 2 and 4.

(2) To remove the bottom chassis, slide it by little and little with giving care to the junction sections with the front chassis and QRB connector.

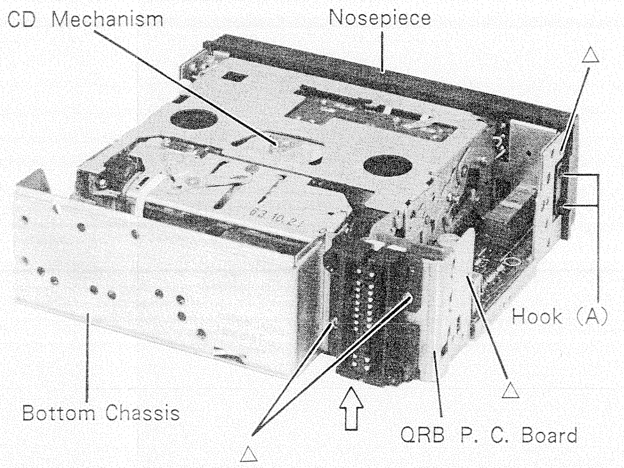

CD Mechanism
Nosepiece
△
Hook (A)
△
Bottom Chassis
△
⇧
QRB P. C. Board

Figure 2

3. Removal of the CD mechanism

(1) After removal of the bottom chassis, remove three screws marked "□" as shown in Figure 5.

(2) Disconnect the two connectors from the Main P. C. board.
To remove the CD mechanism from the Main P. C. board, pull up the CD mechanism by little and little.
Give care to the 15-pins connector which connect the two parts not to bend as shown in Figure 4.

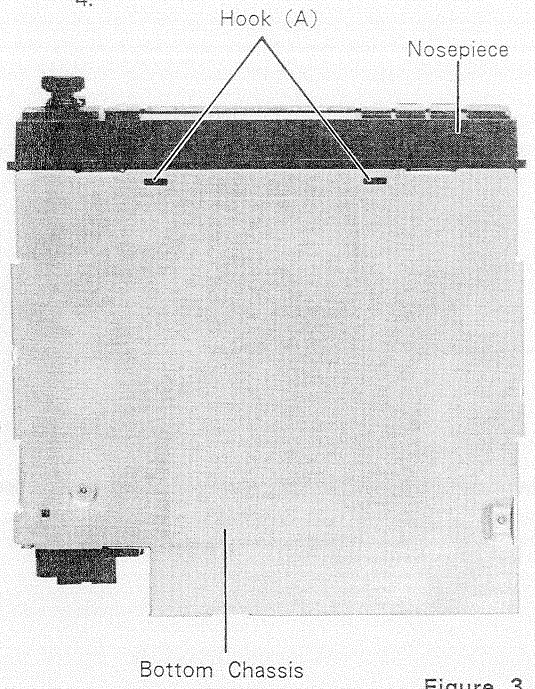

Hook (A)
Nosepiece
Bottom Chassis

Figure 3

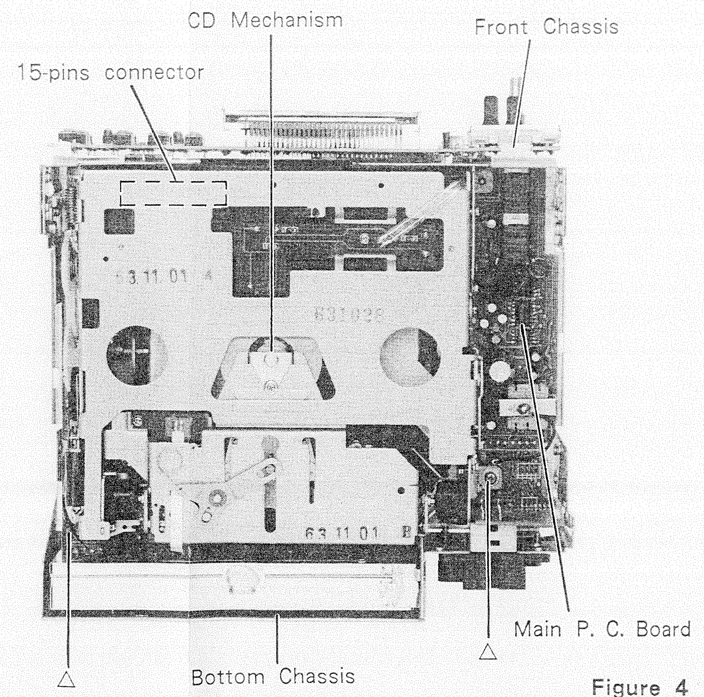

CD Mechanism
Front Chassis
15-pins connector
Main P. C. Board
△
△
Bottom Chassis

Figure 4

4. Removal of the QRB P. C. Board

(1) After removal of CD mechanism, pull up the QRB P. C. board to disconnect the two connectors as shown in Figure 7.
The QRB P. C. board will be removed.

5. Removal of the Main-Front P. C. Board and Main P. C. Board

(1) After removal of the CD mechanism, reverse the three hooks (B) as shown in Figure 6.

(2) Disconnect the 20-pins connector from the Main P. C. board.
To make it easy, insert a thim stick object into an aperture and push out the Main-Front P. C. board as shown in Figure 8.
Then the Main-Front P. C. board will be removed with Main P. C. Board.

* **Notice for assembly the CD mechanism and Main-Front P. C. board into the unit.**
Give care to the 20-pins connector between the Main and the Main-Front P. C. boards and the 15-pins connector between the Main P. C. board and the CD mechanism not to bend them when assemblying the parts.

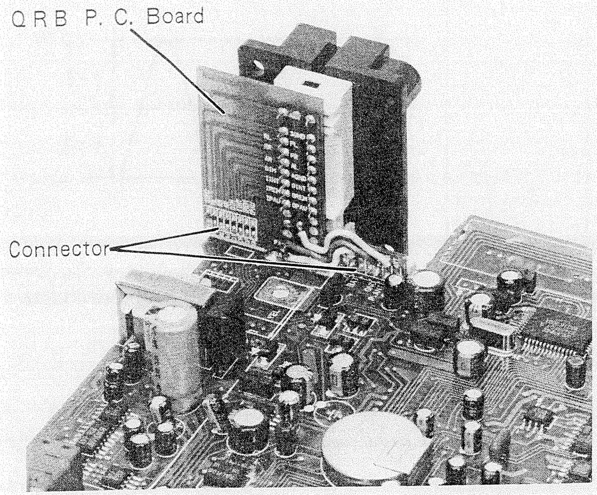

Q R B P. C. Board
Connector

Figure 7

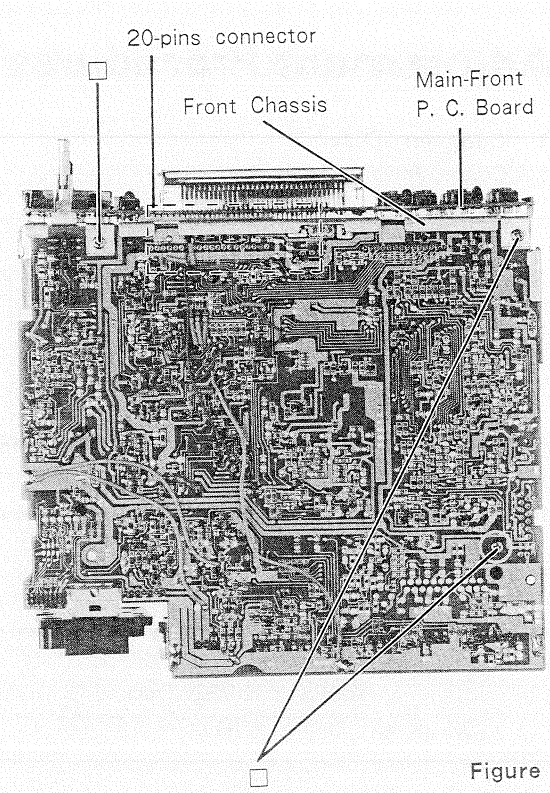

20-pins connector
□
Front Chassis
Main-Front P. C. Board
□

Figure 5

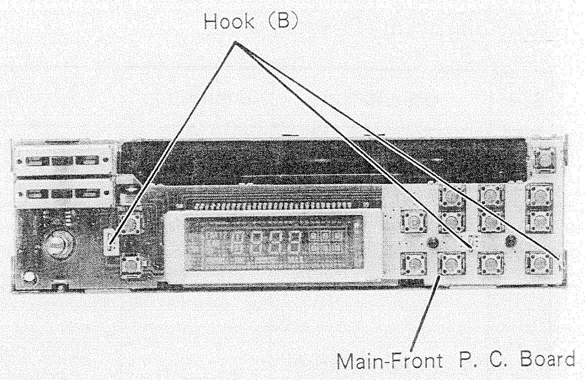

Hook (B)
Main-Front P. C. Board

Figure 6

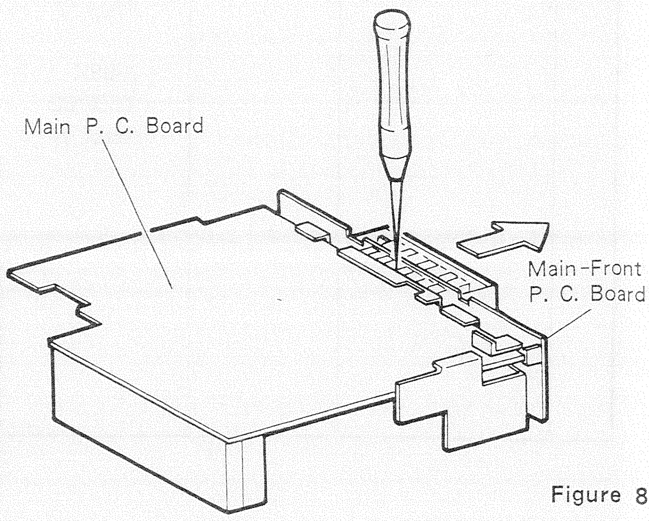

Main P. C. Board
Main-Front P. C. Board

Figure 8

Adjustment Procedures

1. Compact Disc

(1) Connections

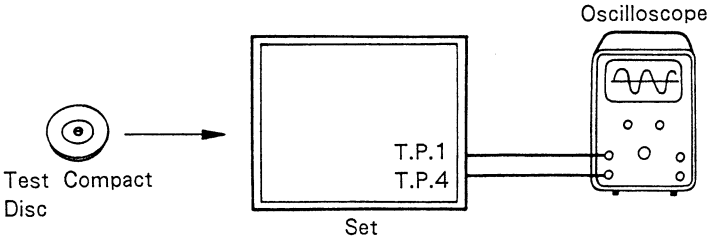
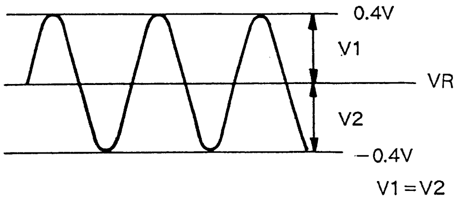


Figure 9

(2) Preparation

- Use Test Disc (Including Infinity Zero $-\infty$ signal)
  Example : SONY YEDS-18 Track 7
  A-BEX YCD-782 Track 8
- Set power supply voltage at 14V DC.

(3) Adjustment Procedures

Step	Description	Connection	Test Signal	Test Point	Adjustment
1	Tracking Balance Adjustment	Figure 1	Infinity Zero $-\infty$dB (Example) • SONY YEDS-18 Track 7 • A-BEX TCD-782 Track 8	T.P.1 T.P.4	① Play a test disc. ② Select the track having Infinity Zero $-\infty$dB signal on the test disc. ③ While playing, short circuit TP2 to TP3 and turn off the tracking servo. ④ Adjust VR201 so that the waveform of the tracking error signal becomes plane symmetry centering at VR line.  ⑤ When adjustment is completed, disconnect the lead wire connected previously between TP2 and TP3.

2. SDK Section

(1) Dummy Antenna

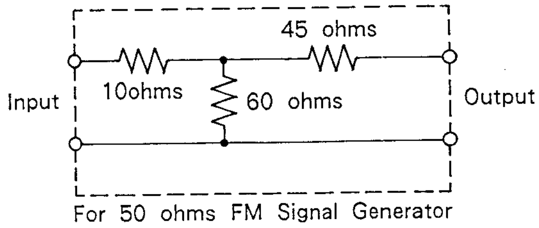

45 ohms
Input
10ohms
60 ohms
Output
For 50 ohms FM Signal Generator

Figure 10

(2) Connections

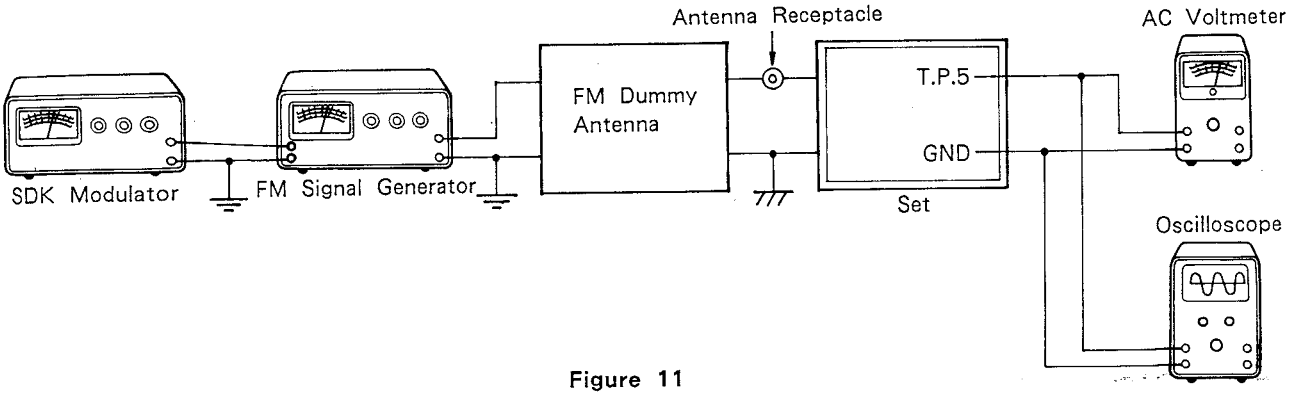
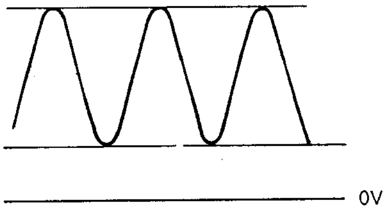

Antenna Receptacle
AC Voltmeter
FM Dummy Antenna
T.P.5
GND
SDK Modulator
FM Signal Generator
Set
Oscilloscope

Figure 11

(3) Adjustment Procedures

Step	Description	Connection	Test Point	Adjustment
1	DK Adjustment	Figure 11	T.P.5	① Set SDK Switch to ON. ② Set the unit frequency to 98.1MHz. ③ Set the output of the signal generator to 66dB, 98.1MHz. ④ Adjust VR101 so that DK output waveform at T.P.5 is maximum. 

Adjustment Locations

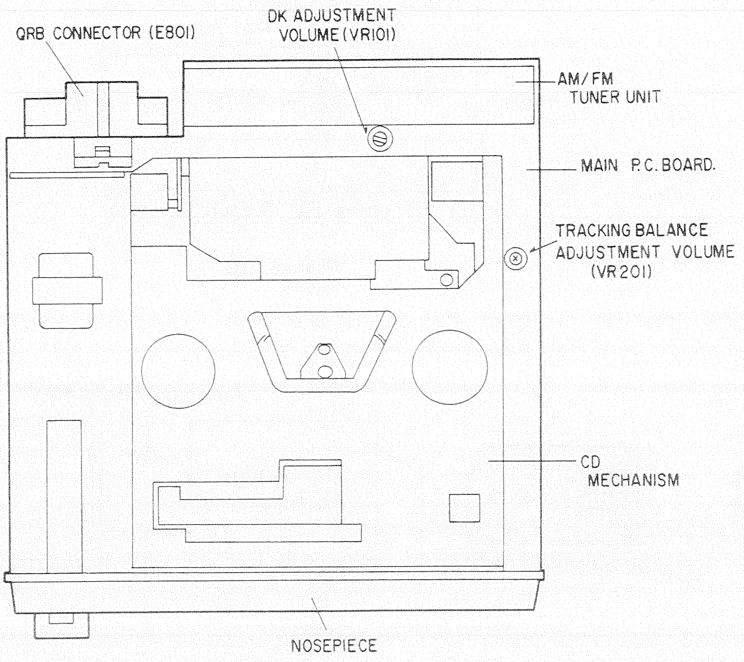
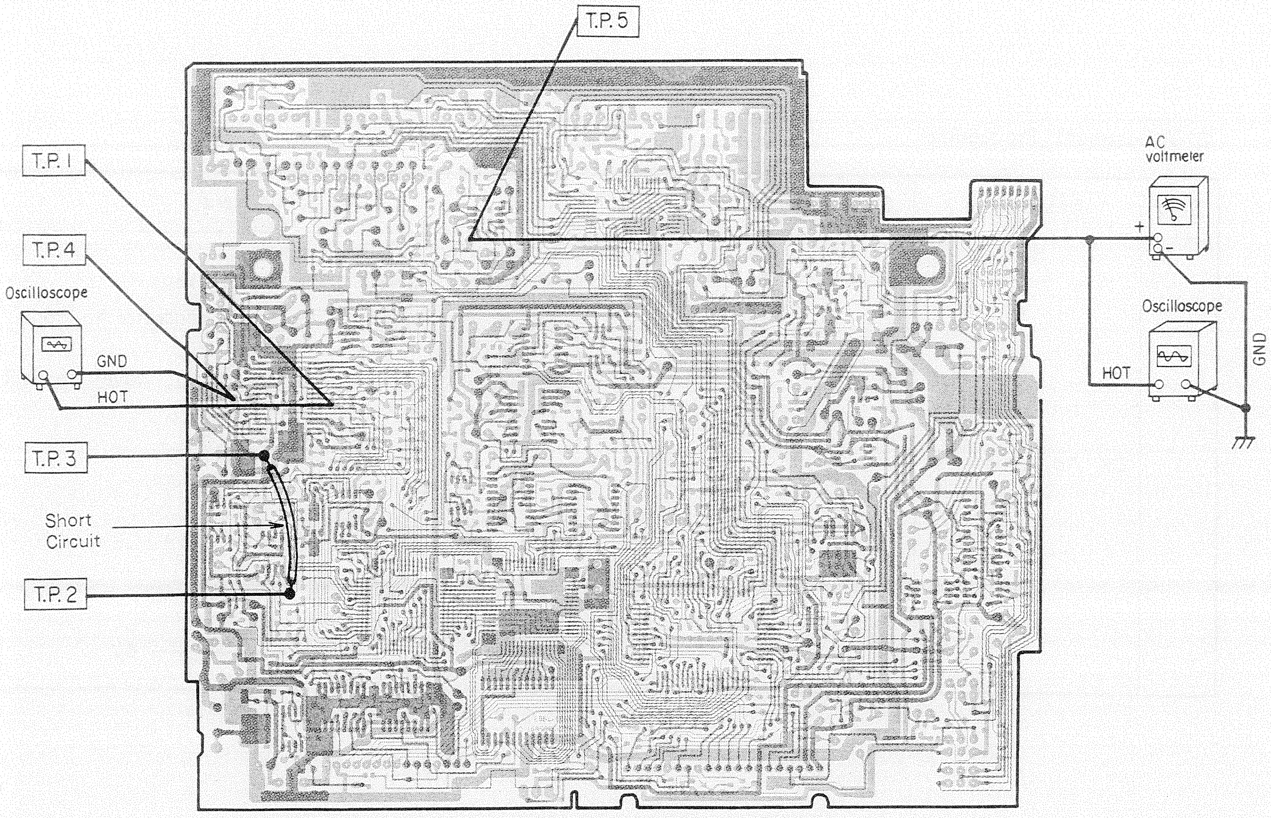

QRB CONNECTOR (E801)
DK ADJUSTMENT VOLUME (VR101)
AM/FM TUNER UNIT
MAIN P.C. BOARD.
TRACKING BALANCE ADJUSTMENT VOLUME (VR201)
CD MECHANISM
NOSEPIECE

Figure 12


T.P. 5
T.P. 1
T.P. 4
Oscilloscope
GND
HOT
T.P. 3
Short Circuit
T.P. 2
AC voltmeter
+
-
Oscilloscope
HOT
GND

Main P. C. Board (Bottom Side)

Figure 13

Description of IC Terminals

● 94468F04 (IC102)

<table>
<tr><th>No.</th><th>Symbol</th><th>I/O</th><th>Terminal description</th></tr>
<tr><td>1</td><td>EO1</td><td rowspan="2">OUT</td><td rowspan="2">PLL Error : High Level for Oscillation Freq. >Reference Freq.
Low Level for Oscillation Freq. <Reference Freq.
Floating for Oscillation Freq. =Reference Freq.</td></tr>
<tr><td>2</td><td>EO2</td></tr>
<tr><td>3</td><td>VDD</td><td></td><td>Power Supply.</td></tr>
<tr><td>4</td><td>VCOL</td><td>IN</td><td>N.C.</td></tr>
<tr><td>5</td><td>VCOH</td><td>IN</td><td>FM/AM VCO IN.</td></tr>
<tr><td>6</td><td>CE</td><td>IN</td><td>High Level IN when Ignition ON.</td></tr>
<tr><td>7</td><td>VDD</td><td></td><td>Power Supply.</td></tr>
<tr><td>8</td><td>NARROW</td><td>OUT</td><td>N.C.</td></tr>
<tr><td>9</td><td>MONO</td><td>OUT</td><td>N.C.</td></tr>
<tr><td>10</td><td>A MEMO & LOCAL</td><td>OUT</td><td>N.C.</td></tr>
<tr><td>11</td><td>A MEMO</td><td>OUT</td><td>N.C.</td></tr>
<tr><td>12</td><td>AM IF</td><td>IN</td><td>AM IF IN</td></tr>
<tr><td>13</td><td>FM IF</td><td>IN</td><td>FM IF IN</td></tr>
<tr><td>14</td><td>COMMAND</td><td>IN</td><td>Serial Data IN from Main Processor.</td></tr>
<tr><td>15</td><td>STATUS</td><td>OUT</td><td>Serial Data OUT to Main Processor.</td></tr>
<tr><td>16</td><td>STRT</td><td>OUT</td><td>Sync signal of communication command to main processor.</td></tr>
<tr><td>17</td><td>$\overline{\text{MUTE}}$</td><td>OUT</td><td>DTS Mute.(Active : Low level)</td></tr>
<tr><td>18</td><td>LOCAL</td><td>OUT</td><td>High Level for Local Seek Tuning.</td></tr>
<tr><td>19</td><td>LOCAL</td><td>OUT</td><td>High Level for Local Seek Tuning.</td></tr>
<tr><td>20</td><td>XO</td><td rowspan="2"></td><td rowspan="2">To Crystal Oscillator (4.5MHz).</td></tr>
<tr><td>21</td><td>XI</td></tr>
<tr><td>22</td><td>GND</td><td></td><td>GND</td></tr>
<tr><td>23</td><td>CO</td><td></td><td>N.C.</td></tr>
<tr><td>24</td><td>TUNER ON</td><td>OUT</td><td>High Level for Tuning.</td></tr>
<tr><td>25</td><td>BAND 3</td><td>OUT</td><td rowspan="3"><table><tr><th></th><th>BAND 1</th><th>BAND 2</th><th>BAND 3</th></tr><tr><td>FM</td><td>1</td><td>0</td><td>0</td></tr><tr><td>AM</td><td>0</td><td>1</td><td>0</td></tr></table></td></tr>
<tr><td>26</td><td>BAND 2</td><td>OUT</td></tr>
<tr><td>27</td><td>BAND 1</td><td>OUT</td></tr>
<tr><td>28
∫
41</td><td>NC</td><td></td><td>N.C.</td></tr>
<tr><td>42</td><td>GND</td><td></td><td>GND</td></tr>
<tr><td>43</td><td>DK</td><td>IN</td><td>DK signal input.</td></tr>
<tr><td>44</td><td>$\overline{\text{SK}}$</td><td>IN</td><td>SK signal input.</td></tr>
<tr><td>45</td><td>$\overline{\text{STEREO}}$</td><td>IN</td><td>Low Level IN for Stereo.</td></tr>
<tr><td>46</td><td>SD</td><td>IN</td><td>High Level IN for Seek Stop.</td></tr>
<tr><td>47</td><td>S. METER</td><td>IN</td><td>FM/AM Signal Meter IN.</td></tr>
<tr><td>48</td><td>Ci</td><td>IN</td><td>Initial selection.
Stand-by mode : X'tal oscillation starts.
Pull-up : Oscillating.</td></tr>
</table>

● TC9200BF (IC201)

No.	Symbol	I/O	Terminal Description
1	AD4	O	External RAM address signal output.
2	AD5		
3	AD6		
4	AD7		
5	AD8		
6	AD9		
7	RW	O	External RAM read/write signal output.
8	CE	O	External RAM chip enable signal output.
9	AD10	O	External RAM address signal output.
10	I/O-7	I/O	External data bus line.
11	I/O-6		
12	I/O-5		
13	I/O-4		
14	I/O-3		
15	I/O-2		
16	I/O-1		
17	I/O-0		
18	TES5	I	For test. Normally "H" or open.
19	TES4		
20	EXCK	I	Sub-code P−W and S0+S1 data read clock input.
21	SUBD	I	Sub-code P−W output.
22	VSS		GND
23	VDD		Power Supply.
24	SBOK	O	Sub-code signal Q data CRC check result output.
25	SUBQ	O	Sub-code signal Q data output.
26	SOS1	O	Sub-code sink S0 and S1 output.
27	PFCK	O	Play frame cycle signal output.
28	PLCK	I	Clock input for data read.
29	EFMI	I	EFM signal input.
30	NC		N.C.
31	NC		
32	SCDA	I	Control data-serial input.
33	SPDA	O	Processor status signal output.
34	COFS	O	Correction frame cycle signal output.
35	WDCK	O	Word clock output.
36	EMPH	O	Emphasis ON/OFF indication signal output.
37	HOF	O	Output data correction flag output.
38	CHCK	O	Channel clock output.
39	BCK	O	Bit clock output.
40	DOUT	O	Data output.
41	SYCK	O	Symbol clock output. Clock of 8-divided BCK.
42	APTR	O	Rch data aperture signal output.
43	APTL	O	Lch data aperture signal output.

No.	Symbol	I/O	Terminal description
44	CK8M	O	8M clock output. X'tal 16.9355MHz 2-divided clock.
45	17MO	O	17M clock output. X'tal 16.9355MHz Buffer output.
46	NC		N.C.
47	X-O	O	To connect X'tal oscillator.
48	X-I	I	
49	CKSE	I	X-I input clock selection. "H" and open : 16.9344MHz "L" : 8.4672MHz.
50	TES1	I	For test. Normally "H" or open.
51	TES2		
52	TES3		
53	VDD		Power supply.
54	VSS		GND
55	TES6	I	For test. Normally "H" or open.
56	AD0	O	External RAM address signal output.
57	AD1		
58	AD2		
59	AD3		
60	TES7	I	For test. Normally "H" or open.

● TC9201BF (IC202)

No.	Symbol	I/O	Terminal description
1	4MCK	O	4M clock output. f=4.2336MHz (X'tal divided)
2	RST	I	Reset input. "L" Internal system reset.
3	LDC	O	Control signal output for laser diode drive circuit.
4	SLP	O	EFM signal forward rotation output.
5	SLN	O	EFM signal reverse rotation output.
6	EFMI	I	EFM signal input.
7	FOSI	O	Focus actuator drive signal polarity indication output.
8	ZCL2	O	Built-in DA converter output−2.
9	ZC2	I	External comparator output signal input−2.
10	ZCL1	O	Built-in DA converter output−1.
11	ZC1	I	External comparator output signal input−1.
12	SEL	O	Pickup servo mode indication signal output.
13	VR1		Built-in DA converter power supply (+2.2V [VREF]).
14	FEL1	O	Analog switch output for focus gain adjustment.
15	FEL2		
16	TEL1	O	Analog switch output for tracking gain adjustment.
17	TEL2		
18	FBRK	O	Focus actuator brake signal output.
19	FKIC	O	Focus actuator drive signal output.
20	TKIC	O	Tracking actuator kick signal output.
21	DFCT	O	Defect detection.

No.	Symbol	I/O	Terminal description
22	TGUH	O	Analog switch output for tracking servo loop intermediate and high band phase comparator selection.
23	VDD		Power supply.
24	TGUL	O	Analog switch output for tracking servo loop low band gain.
25	TESH	I	Analog switch input for tracking error signal sample hold.
26	TEOF	O	Analog switch output for ON/OFF of tracking servo operation.
27	FMON	O	Analog switch output for ON/OFF of feeding servo operation.
28	DMFC	O	AFC output for disc motor CLV servo.
29	DMPC	O	APC output for disc motor CLV servo.
30	DMON	O	Analog switch output for disc motor drive circuit gain selection.
31	FMGU	O	Analog switch output for feeding servo loop gain selection.
32	VR2		Pickup servo and disc servo circuit reference power supply (+2.2v [VREF]).
33	FMFB	O	Control signal output for feed motor forward/backward.
34	VDD2		Pickup servo and disc servo circuit power supply.
35	84MK		8M clock input. f=8.4672MHz (X'tal divided)
36	WDCK	I	Control data communication clock input.
37	COFS	I	Correction frame cycle signal input. f=7.345KHz
38	SPDA	I	Status signal serial input.
39	SCDA	O	Control data serial output.
40	TES3	I	For test. Normally "L".
41	SGS	I	PLL circuit selection. "H" : Analog, "L" : Digital.
42	PD	O	PLL phase comparison signal output.
43	X-O	O	To connect X'tal oscillator for generations of clock required for system.
44	X-I	I	
45	TES2	I	For test. Normally "H" or open.
46	TES1		
47	DOUT	O	EFM signal output.
48	PLCK	O	Bit clock output.
49	PFCK	I	Play frame cycle signal input.
50	SOS1	I	Sub-code signal cycle pattern S0 and S1 input.
51	SUBQ	I	Sub-code signal Q data input.
52	SBOK	I	Sub-code signal CRC check result input.
53	VDD		Power supply voltage (+5v).
54	VSS		GND
55	BUS0	I/O	Command and data communication bus line.
56	BUS1		
57	BUS2		
58	BUS3		
59	DA/CO	I/O	Command and data processing control.
60	BUCK	I	Command and data communication clock input.

●CXK5816M, LC3516AML, TC5517FL (IC203)

No.	Symbol	I/O	Terminal description
1	A7	I	Address input.
2	A6	I	Address input.
3	A5	I	Address input.
4	A4	I	Address input.
5	A3	I	Address input.
6	A2	I	Address input.
7	A1	I	Address input.
8	A0	I	Address input.
9	I/O1	I/O	Data input/output.
10	I/O2	I/O	Data input/output.
11	I/O3	I/O	Data input/output.
12	GND		GND
13	I/O4	I/O	Data input/output.
14	I/O5	I/O	Data input/output.
15	I/O6	I/O	Data input/output.
16	I/O7	I/O	Data input/output.
17	I/O8	I/O	Data input/output.
18	$\overline{CE}$	I	Chip enable input.
19	A10	I	Address input.
20	$\overline{OE}$	I	Output enable input.
21	$\overline{WE}$	I	Write enable input.
22	A9	I	Address input.
23	A8	I	Address input.
24	VCC		Power supply (+5V).

● LC7881MC (IC204)

No.	Symbol	I/O	Terminal description
1	CH1OUT	O	CH1 output.
2	VrefH1	I	Reference voltage "H" input-1.
3	VrefH2	I	Reference voltage "H" input-2.
4	VDD		Power supply voltage (+5V).
5	WCLK2	I	Word clock 2 input.
6	LRCK	I	LR input.
7	WCLK1	I	Word clock 1 input.
8	DATA	I	Digital audio data input.
9	BCLK		Bit clock.
10	VDD		Power supply voltage (+5V).
11	TSTOUT	O	Test output. Normally open.
12	TST1	I	Test input to connect GND normally.
13	TST2		
14	IF		Interface selection.
15	GND		GND
16	VrefL1	I	Reference voltage "L" input-1.
17	GND		GND
18	VrefL2	I	Reference voltage "L" input-2.
19	NC		N.C.
20	CH2OUT	O	CH2 output.

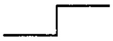
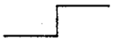
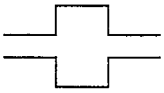
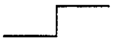
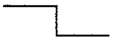
● SM5807ES (IC205)

No.	Symbol	I/O	Terminal description
1	XT	I	Oscillator input.
2	XT	O	Oscillator output.
3	CKSL	I	High : 16.9344MHz or 17.2872MHz crystal oscillation or external input at XT. Low : 8.4672MHz or 8.6436MHz crystal oscillation or external input at XT.
4	CKO	O	Clock output.
5	LRCI	I	44.1kHz clock input.
6	DIN	I	Data input.
7	BCKI	I	Input serial bit clock.
8	VSS		GND (0V)
9	SCSL	I	High : System clock=192fs. Low : System clock=196fs. (fs : Sampling frequency)
10	DGR	O	Right channel deglitch (176.4KHz).
11	DGL	O	Left channel deglitch (176.4KHz).
12	DOUT	O	Data output.
13	WDCO	O	Output control clock (352.8KHz).
14	LRCO	O	Output control clock (176.4KHz).
15	BCKO	O	Serial output bit clock (8.4672MHz or 8.6436MHz).
16	VDD		Power supply (5V).

● TA8101F (IC207)

No.	Symbol	I/O	Terminal description
1	FS1	I	Main-beam (I−V) converter 1, 2 input.
2	FS2		
3	VREF	O	Reference voltage supply (+2.2V).
4	TS1	I	Sub-beam (I−V) converter 1 input.
5	TS1F	O	Sub-beam (I−V) converter 1, 2 output.
6	TS2F		
7	TS2	I	Sub-beam (I−V) converter 2 input.
8	VCC		Power supply (+5V).
9	RFN	I	RF Amp reverse phase input.
10	RFO	O	RF Amp output.
11	RFI	I	RF input.
12	SLP	I	Slice level control Amp normal phase input.
13	SLN	I	Slice level control Amp reverse phase input.
14	GND		GND
15	EFMO	O	EFM data slicer output.
16	ZCL2	I	Status comparator 2 normal phase input.
17	ZC2	O	Status comparator 2 output.
18	ZCL1	I	Status comparator 1 normal phase input.
19	ZC1	O	Status comparator 2 output.
20	SEL	I	Analog switch control input.
21	TSN	I	Tracking servo Amp reverse phase input.
22	TSO	O	Tracking servo Amp output.
23	FSO	O	Focus servo Amp output.
24	FSN	I	Focus servo Amp reverse phase input.
25	COSC	O	To capacitor for focus search generator.
26	OSC1	I	Internal power supply control.
27	FE1	I	Focus error input.
28	FEO	O	Focus error amp. output.
29	FEN	I	Focus error amp. reverse phase input.
30	FEP	I	Focus error amp. normal phase input.

● 15263W01, 15778W01 (IC601)

No.	Symbol	Status	I/O	Terminal description
1	8cm END	H	I	Disc detector photo SW input  8cm END detection
2	8cm RELOAD	H	I	Disc detector photo SW input  8cm Reload detection
3	12cm LOAD END 12cm EJECT END	L H	I	Disc detector photo SW input  12cm Load End detection 12cm EJECT END detection
4	$\overline{\text{CAM END}}$	L	I	CLAMP END detection SW input
5	BUS 0		I/O	Com. line to TC9201
6	BUS 1		I/O	Com. line to TC9201
7	BUS 2		I/O	Com. line to TC9201
8	BUS 3		I/O	Com. line to TC9201
9	DA/CO		I/O	Com. line to TC9201
10	$\overline{\text{WTO}}$	L	O	Watch • dog timer output
11	Disc IN	H	I	Disc detection photo SW input  Disc IN detection
12	$\overline{\text{Limit SW}}$	L	I	Pick-up inner limit detector input 
13	FL-CLOCK		O	Clock output to FL driver
14	FL-DATA		O	Data output to FL driver
15	FL-CE	H	O	Data latch output to FL driver
16	F-BLANK	L	O	ON/OFF switching to FL driver L : OFF, DIM : pulse
17	SEEK	H	O	H : Tuner SEEK (: LED ON)
18	Load-REV	H	O	Loading motor inverse rotation output
19	Load-FWD	H	O	Loading motor normal rotation output
20	SOLNOID	H	O	DP-Mechanism solenoid driver output
21	V CONT	H	O	Servo circuit power supply controller output
22	Load Cont	H	O	DP mechanism loading circuit power supply controller output
23	LAMP	H	O	LAMP power supply controller output Power SW ON : H
24	EMP	H	O	Pre-emphasized recording disc in PLAY : H
25				GND
26	VSS			GND
27				OPEN
28				OPEN
29	OUT PAUSE	H	O	Reciprocal reset signal out : Pause signal to superior source unit
30	CD/$\overline{\text{AUX}}$		O	Inner/outer source switching signal H : Inner, L : Outer
31	ALM		O	Alarm output ON/OFF switching signal.
32	$\overline{\text{SDK-TONE}}$		O	Audio signal switching in alarm mode.
33	CD/$\overline{\text{TUNER}}$		O	CD/Tuner source switching signal H : CD, L : Tuner
34	$\overline{\text{BLCK}}$		O	Com. line to TC9201 Clock output
35				OPEN
36	DTS-CE	H	O	DTS processor CE control output
37	Single		O	8cm/12cm CD spindle motor status switching H : 8cm, L : 12cm
38	DIMMER	L	I	Dimmer input L : Dimmer ON
39	IN REMOTE	L	I	Reciprocal reset signal IN : Remote ON signal from superior source unit

No.	Symbol	Status	I/O	Terminal description
40	IN PAUSE	L	I	Reciprocal reset signal IN. Pause signal from inferior source unit
41	A-HOLD		I	ACC detection input H : ACC ON, L : ACC OFF
42	D-START	H	I	Com. line to DTS processor Com. start signal
43	RESET	L	I	Micro-processor reset IN L : Reset
44	X'tal-IN		I	Crystal input
45	X'tal-OUT		O	Crystal output 4.19MHz
46	HOLD		I	Stand-by release input Stand-by release in ACC ON ; H : Stand-by release with B-HOLD stand-by release
47	TSENS	H	I	Thermal sensor IN for laser diode protection H : Protection circuit act display･･･H
48	IN INT	L	I	+5V
49	B-HOLD	L	I	Battery detection input. L : Forced stand-by
50	D-MUTE	L	I	DTS processor Mute. L : Mute
51	D-STS		I	Com. line to DTS processor. Data input
52	D-CMD		O	Com. line to DTS processor. Data output
53	D-CLK		I	Com. line to DTS processor. Clock output
54	OUT-INT	H	O	Signal output terminal to stop enternal unit when DK signal enters in SDK mode.
55	Power ON	H	O	Unit power supply control H : Power switch ON
56	A-MUTE	L	O	Audio mute output
57	REMOTE	H	O	Reciprocal reset out. REMOTE out signal to inferior source unit
58	VDD		I	+5V Micro processor power supply
59	VAREF		I	+5V A/D converter reference power supply
60	VASS		I	GND
61	Power SW		I	Power switch input. L : Power ON
62	KEY A/D 0		I	KEY input A/D converter 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6 VDD into digit
63	KEY A/D 1		I	KEY input A/D converter 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6 VDD into digit
64	KEY A/D 2		I	KEY input A/D converter 0/6, 1/6, 2/6, 3/6, 4/6, 5/6, 6/6 VDD into digit

● MSC1194GS (IC901, 902)

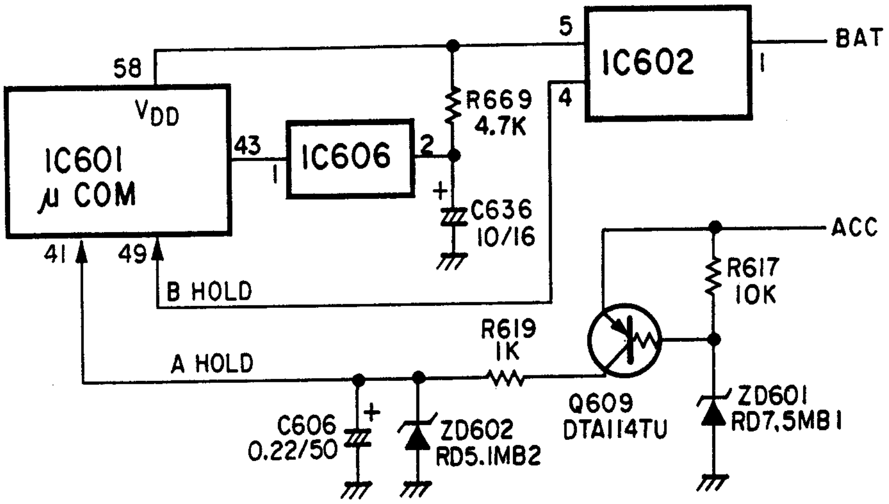
No.	Symbol	I/O	Terminal description
1	OUTPUT13	O	FL drive output.
2	OUTPUT14		
3	OUTPUT15		
4	OUTPUT16		
5	OUTPUT17		
6	GND		GND
7	OUTPUT18	O	FL drive output.
8	OUTPUT19		
9	OUTPUT20		
10	OUTPUT21		
11	OUTPUT22		
12	OUTPUT23		
13	OUTPUT24		
14	OUTPUT25		
15	OUTPUT26		
16	OUTPUT27		
17	GND		GND
18	OUTPUT28	O	FL drive output.
19	OUTPUT29		
20	OUTPUT30		
21	OUTPUT31		
22	OUTPUT32		
23	OUTPUT33		
24	DATE OUT	O	Data output.
25	LOAD ENABLE	I	Input to transmit data to data latch and hold the data.
26	GND		GND
27	BLANK	I	To set all output terminals to OFF ("L").
28	TEST		To set all output terminals to ON ("H").
29	VDD		(+) potential supply.
30	DATA IN	I	Serial data input.
31	CLOCK	I	Clock input.
32	OUTPUT1	O	FL drive output.
33	OUTPUT2		
34	OUTPUT3		
35	OUTPUT4		
36	OUTPUT5		
37	OUTPUT6		
38	OUTPUT7		
39	GND		GND
40	OUTPUT8	O	FL drive output.
41	OUTPUT9		
42	OUTPUT10		
43	OUTPUT11		
44	OUTPUT12		

Explanation for circuit operation

SYSTEM OUTLINE

On the other hand, the 7903M has two microprocessors, Main micro-processor and DTS micro-processor. The Main micro-processor controls the DTS micro-processor.

The main micro-processor controls key input data and performs serial communications with the FL driver to control fluorecent display.


IC601
μ COM
VDD
58
43
41
49
IC606
1
2
IC602
5
4
1
BAT
ACC
R669
4.7K
C636
10/16
B HOLD
A HOLD
R619
1K
R617
10K
Q609
DTA114TU
C606
0.22/50
ZD602
RD5.1MB2
ZD601
RD7.5MB1

Micro-processor reset circuit

When BAT (or IGN) is turned on, 5V stabilized voltage by IC602 is supplied to VDD of IC601.

At the same time, the voltage delayed by R669 and C636 is supplied to IC606, and when the voltage reaches the threshold voltage of 2.5V $\overline{\text{RESET}}$ of IC601 is turned off.

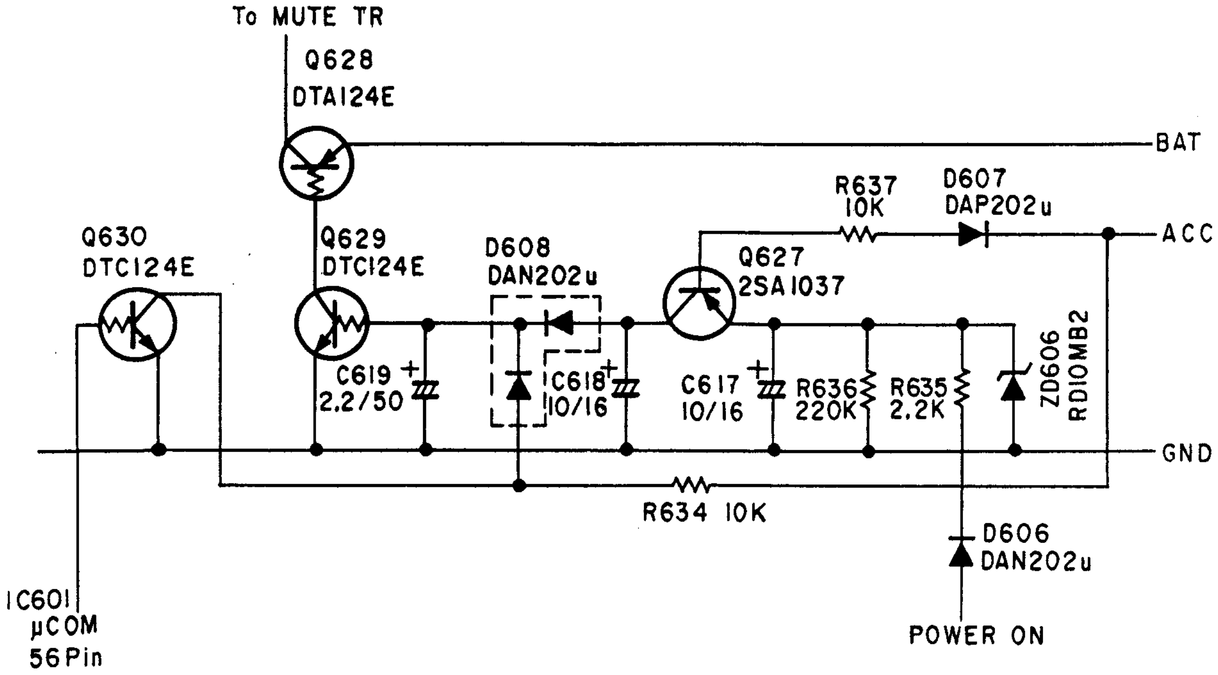
ACC and BAT detection circuit

When the power supply voltage lowers to a level which may cause erroneous operations on the micro-processor, the unit immediately enters stand-by operation by detecting voltages, of ACC and VDD of the micro-processor.

ACC voltage is checked by Q609 and supplied to the collector of Q609 when it is higher than 8V. That is, the micro-processor understands the ACC voltage is ON (correct).

On the same way, when the battery voltage supplied to IC602 is higher than 4.2V the micro-processor understands the battery voltage is correct.

MUTE drive circuit


To MUTE TR
Q628
DTA124E
BAT
R637
10K
D607
DAP202u
ACC
Q630
DTC124E
Q629
DTC124E
D608
DAN202u
Q627
2SA1037
C619
2.2/50
C618
10/16
C617
10/16
R636
220K
R635
2.2K
ZD606
RD10MB2
GND
R634 10K
D606
DAN202u
IC601
μCOM
56Pin
POWER ON

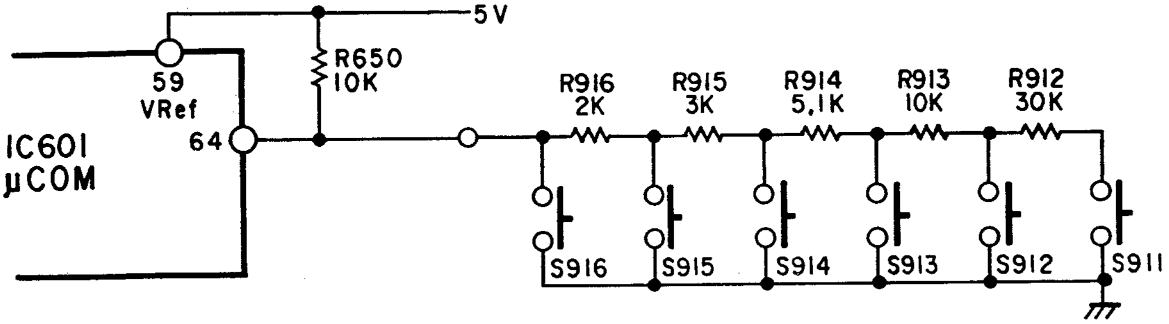
MUTE controlled by the micro-processor

When the base voltage of Q630 changes to L, the collector voltage of Q628 changes to H, then it turns MUTE ON.

MUTE when ACC is OFF

The emitter voltage of Q627 is 10V. When ACC voltage is under 10V, Q627 is on and then MUTE is ON.

KEY input circuit

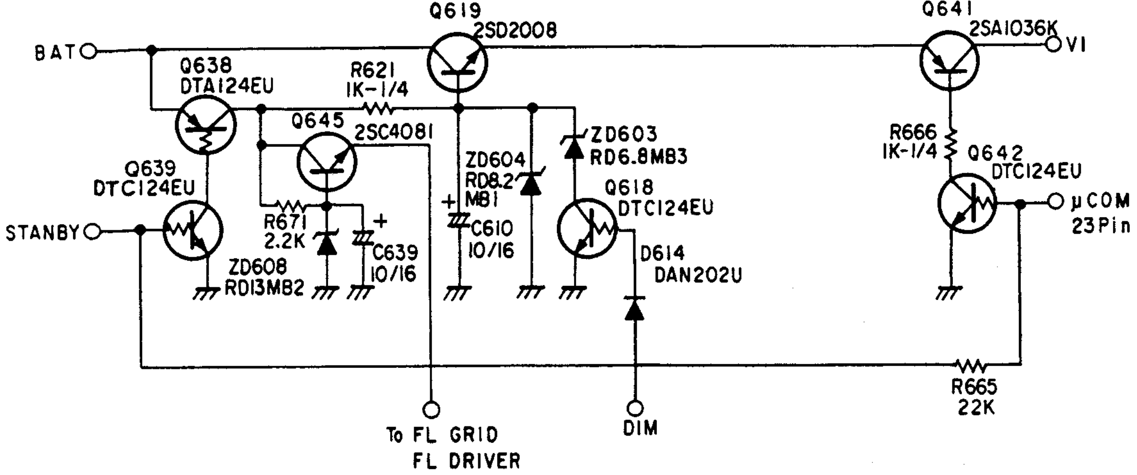


The micro-processor understands which key is pressed by A/D conversion.
Pressing each key develops a voltage at pin 64 as shown below, and the micro-processor compares the voltage with the reference voltage ($V_{Ref} \fallingdotseq 5V$) applied to pin 59, thereby understanding which key is pressed.

S916	$0/6V \fallingdotseq 0$	$\frac{0\ \text{ohm}}{10\text{k ohm}+0\ \text{ohm}} \times 5V = \frac{0}{10} \times 5V = 0V$
S915	$1/6V \fallingdotseq 0.8$	$\frac{2\text{k ohm}}{10\text{k ohm}+2\text{k ohm}} \times 5V = \frac{2}{12} \times 5V = \frac{1}{6} \times 5V \fallingdotseq 0.8V$
S914	$2/6V \fallingdotseq 1.7$	$\frac{5\text{k ohm}}{10\text{k ohm}+5\text{k ohm}} \times 5V = \frac{5}{15} \times 5V = \frac{1}{3} \times 5V \fallingdotseq 1.7V$
S913	$3/6V \fallingdotseq 2.5$	$\frac{10.1\text{k ohm}}{10\text{k ohm}+10.1\text{k ohm}} \times 5V = \frac{10.1}{20.1} \times 5V = \frac{1}{2} \times 5V \fallingdotseq 2.5V$
S912	$4/6V \fallingdotseq 3.3$	$\frac{20.1\text{k ohm}}{10\text{k ohm}+20.1\text{k ohm}} \times 5V = \frac{20.1}{30.1} \times 5V \fallingdotseq \frac{2}{3} \times 5V \fallingdotseq 3.3V$
S911	$5/6V \fallingdotseq 4.2$	$\frac{50.1\text{k ohm}}{10\text{k ohm}+50.1\text{k ohm}} \times 5V = \frac{50.1}{60.1} \times 5V \fallingdotseq \frac{5}{6} \times 5V \fallingdotseq 4.2V$

The same results appear on No. 62 and 63 pins.

Lamp/FL filament power supply circuit


BAT
STANBY
Q638
DTA124EU
Q639
DTC124EU
Q619
2SD2008
R621
1K-1/4
Q645
2SC4081
R671
2.2K
ZD608
RD13MB2
C639
10/16
ZD604
RD8.2
MB1
C610
10/16
ZD603
RD6.8MB3
Q618
DTC124EU
D614
DAN202U
Q641
2SA1036K
V1
R666
1K-1/4
Q642
DTC124EU
μCOM
23Pin
R665
22K
To FL GRID
FL DRIVER
DIM

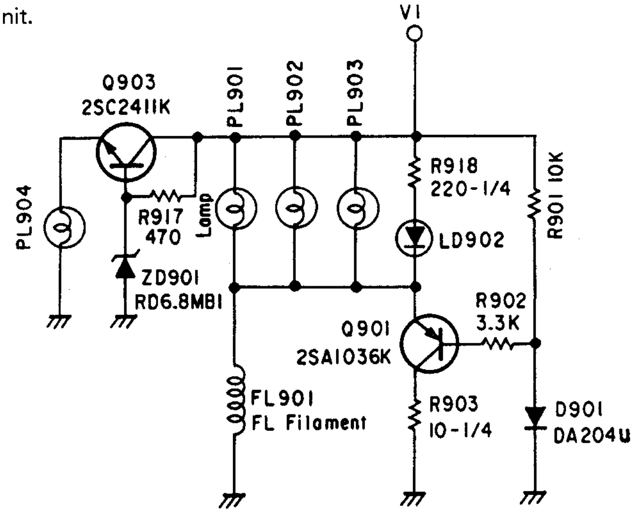
When STAND-BY voltage goes H, the power supply circuit becomes active.

The stabilized voltage by Q619 is supplied to V1 through switching transistor Q641.

When DIM input enters, it controls the base voltage of Q619, turns Q619 on, and lowers the emitter voltage, decreasing brightness of the lamp.

Output at pin 23 of the micro-processor is H, when voltage at pin 38 of the micro-processor is L (DIM input is ON) and one of the following conditions is met,

- A disc is inserted in the unit.
- IN REM input is ON.


V1
Q903
2SC2411K
PL901
PL902
PL903
PL904
R917
470
Lamp
ZD901
RD6.8MB1
R918
220-1/4
LD902
R901 10K
R902
3.3K
Q901
2SA1036K
FL901
FL Filament
R903
10-1/4
D901
DA204U

V1 voltage is supplied to the Lamps and FL filament.

The voltage supplied to PL904 is fixed by Q903 to obtain constant illumination if V1 voltage is varied by DIM control.

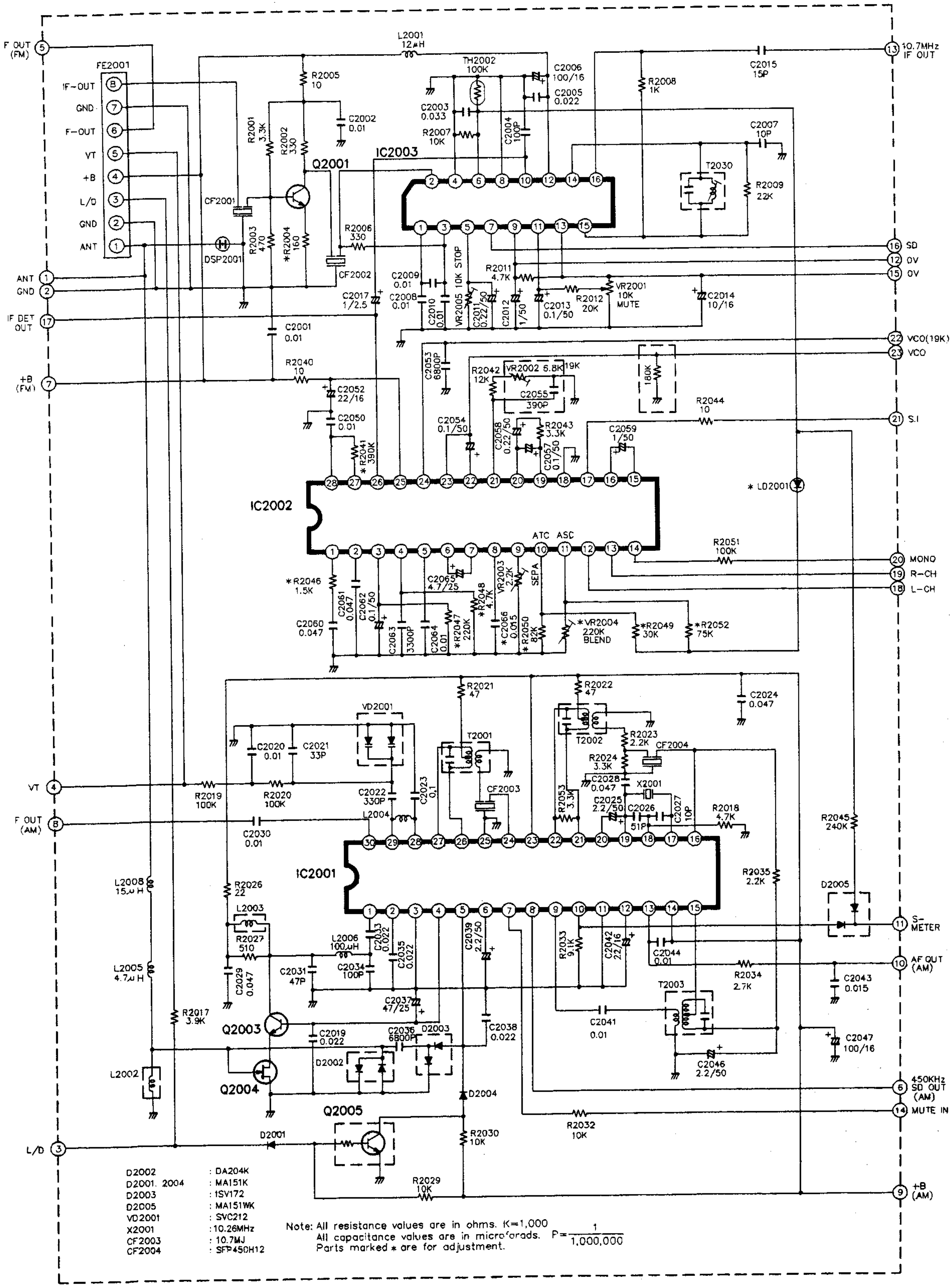
The voltage supplied to FL filament connected with PL901, PL902, PL903 and LD902 in series is fixed by Q901. If the emitter voltage of Q901, supplied to FL filament, is higher than the fixed voltage by the base voltage of Q901, Q901 is ON to lower the emitter voltage.

When the emitter voltage lowers at a value lower than the specified voltage, Q901 turns off and its emitter voltage reaches a value (about 2V) specified by the base voltage.

If V1 voltage is varied by DIM control and the Lamps illumination is varied under the FL filament voltage is not varied, that is, the emitter voltage of Q901 kept constant.

This circuit gives less current comsumption and less heat generation than the circuit contains independent power supply circuits for the lamps and the FL filament.

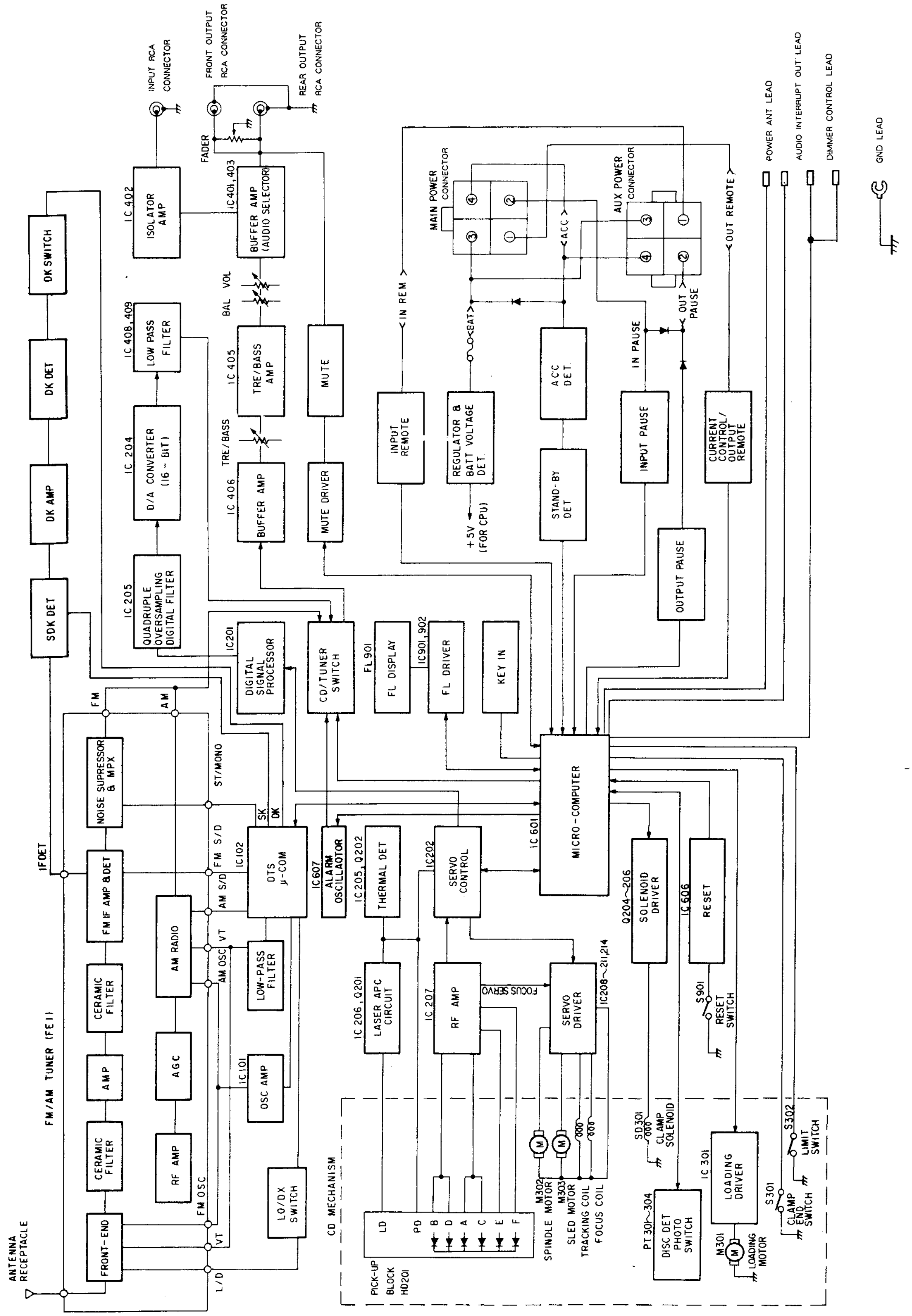
Tuner Schematic Diagram


F OUT (FM) ⑤
FE2001
IF-OUT ⑧
GND ⑦
F-OUT ⑥
VT ⑤
+B ④
L/D ③
GND ②
ANT ①
ANT ①
GND ②
IF DET OUT ⑰
+B (FM) ⑦
CF2001
DSP2001
Q2001
CF2002
IC2003
IC2002
IC2001
T2030
TH2002 100K
L2001 12μH
10.7MHz IF OUT ⑬
SD ⑯
0V ⑫
0V ⑮
VCO(19K) ㉒
VCO ㉓
S.I ㉑
MONO ⑳
R-CH ⑲
L-CH ⑱
VR2001 10K MUTE
VR2005 10K STOP
VR2002 6.8K 19K
VR2003 2.2K SEPA
*VR2004 220K BLEND
ATC ASC
* LD2001
VD2001
T2001
T2002
CF2003
CF2004
X2001
T2003
D2005
VT ④
F OUT (AM) ⑧
L2008 15μH
L2005 4.7μH
L2003
L2002
L2004
L2006 100μH
Q2003
Q2004
Q2005
D2001
D2002
D2003
D2004
L/D ③
S-METER ⑪
AF OUT (AM) ⑩
450KHz SD OUT (AM) ⑥
MUTE IN ⑭
+B (AM) ⑨

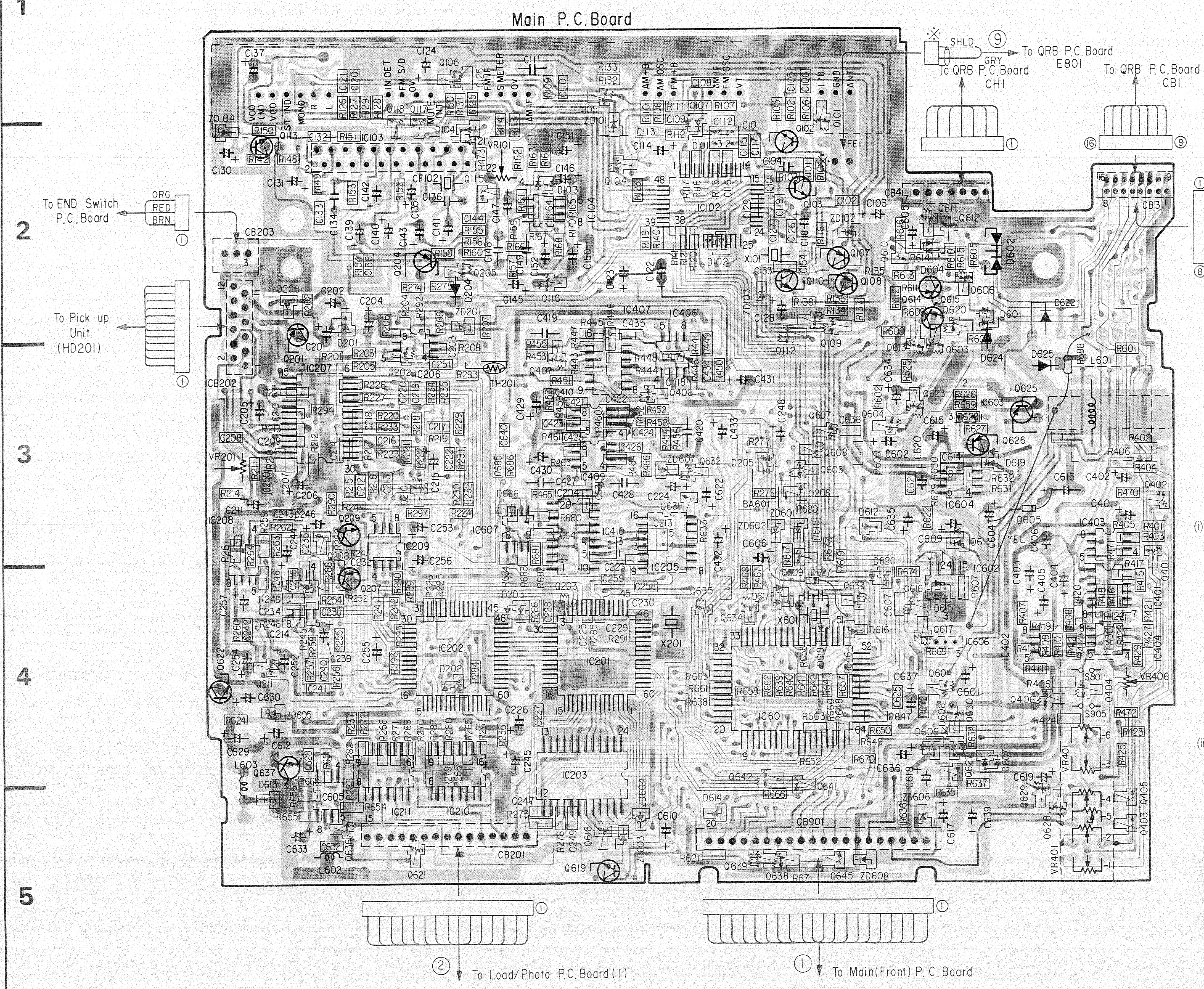
D2002	: DA204K
D2001, 2004	: MA151K
D2003	: 1SV172
D2005	: MA151WK
VD2001	: SVC212
X2001	: 10.26MHz
CF2003	: 10.7MJ
CF2004	: SFP450H12

Note: All resistance values are in ohms. K=1,000
All capacitance values are in microfarads. $P=\frac{1}{1,000,000}$
Parts marked * are for adjustment.

Block Diagram


ANTENNA RECEPTACLE
FM/AM TUNER (FE1)
FRONT-END
CERAMIC FILTER
AMP
CERAMIC FILTER
FM IF AMP & DET
NOISE SUPPRESSOR & MPX
IF DET
FM
AM
RF AMP
AGC
AM RADIO
FM OSC
VT
L/D
AM OSC
AM S/D
FM S/D
ST/MONO
IC 101
OSC AMP
LOW-PASS FILTER
IC 102
DTS μ-COM
SK
DK
LO/DX SWITCH
SDK DET
DK AMP
DK DET
DK SWITCH
IC 205
QUADRUPLE OVERSAMPLING DIGITAL FILTER
IC 204
D/A CONVERTER (16-BIT)
IC 408, 409
LOW PASS FILTER
IC 402
ISOLATOR AMP
INPUT RCA CONNECTOR
FRONT OUTPUT RCA CONNECTOR
REAR OUTPUT RCA CONNECTOR
FADER
IC401, 403
BUFFER AMP (AUDIO SELECTOR)
BAL
VOL
IC 405
TRE/BASS AMP
TRE/BASS
IC 406
BUFFER AMP
MUTE
MUTE DRIVER
IC201
DIGITAL SIGNAL PROCESSOR
CD/TUNER SWITCH
FL 901
FL DISPLAY
IC901, 902
FL DRIVER
KEY IN
IC607
ALARM OSCILLAOTOR
IC 205, Q202
THERMAL DET
IC202
SERVO CONTROL
IC 601
MICRO-COMPUTER
IC 206, Q201
LASER APC CIRCUIT
IC 207
RF AMP
FOCUS SERVO
IC208~211, 214
SERVO DRIVER
Q204~206
SOLENOID DRIVER
IC 606
RESET
S901
RESET SWITCH
CD MECHANISM
PICK-UP BLOCK HD201
LD
PD
B
D
A
C
E
F
M302 SPINDLE MOTOR
M303 SLED MOTOR
TRACKING COIL
FOCUS COIL
SD301
CLAMP SOLENOID
PT301~304
DISC DET PHOTO SWITCH
IC 301
LOADING DRIVER
M301
LOADING MOTOR
S301
CLAMP END SWITCH
S302
LIMIT SWITCH
INPUT REMOTE
IN REM
REGULATOR & BATT VOLTAGE DET
BAT
+5V (FOR CPU)
MAIN POWER CONNECTOR
①
②
③
④
ACC
ACC DET
STAND-BY DET
AUX POWER CONNECTOR
IN PAUSE
INPUT PAUSE
OUT PAUSE
OUTPUT PAUSE
OUT REMOTE
CURRENT CONTROL/ OUTPUT REMOTE
POWER ANT LEAD
AUDIO INTERRUPT OUT LEAD
DIMMER CONTROL LEAD
GND LEAD

Parts Layout on P.C. Boards and Wiring Diagram (1/2)


1
2
3
4
5
Main P.C.Board
To END Switch P.C.Board
ORG
RED
BRN
CB203
To Pick up Unit (HD201)
CB202
To QRB P.C.Board E801
SHLD
GRY
To QRB P.C.Board CH1
To QRB P.C.Board CB1
To QRB P.C.Board CBI
CB3
CB4
IC101
IC102
IC103
IC104
IC201
IC202
IC203
IC206
IC207
IC208
IC209
IC210
IC211
IC214
IC401
IC403
IC404
IC405
IC406
IC407
IC409
IC410
IC601
IC602
IC603
IC604
IC607
X101
X201
X601
VR101
VR201
VR401
VR406
TH201
S801
S905
CB201
CB901
To Load/Photo P.C.Board (1)
To Main(Front) P.C.Board

IC101

1	0V
2	3.7V
3	1.5V
4	1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	
20	PS	44	
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC401

1	4.4V	6	8.7V	11	4.4V
2	4.4V	7	0V	12	0V
3	4.4V	8	4.4V	13	0V
4	4.4V	9	4.4V	14	8.7V
5	8.7V	10	4.4V		

IC402

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

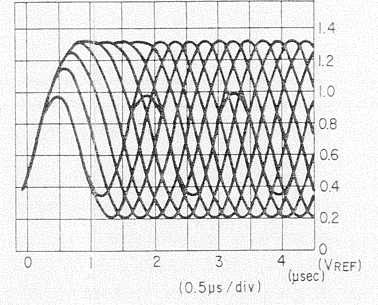
IC409

1	4.7V
2	4.7V
3	3.1V
4	0V
5	3.1V
6	4.7V
7	4.7V
8	8.7V

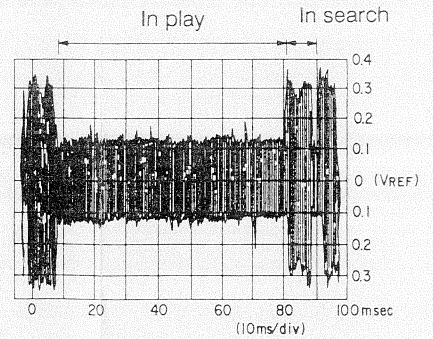
IC410

1	0V
2	PS
3	0V
4	PS
5	5V

(i) Waveform at RFO terminal (No. 10 pin of IC701, TA8101F), when unit in play.



(ii) Waveform at TSO terminal (No. 22 pin of IC701, TA8101F), when unit in play/search.



IC601

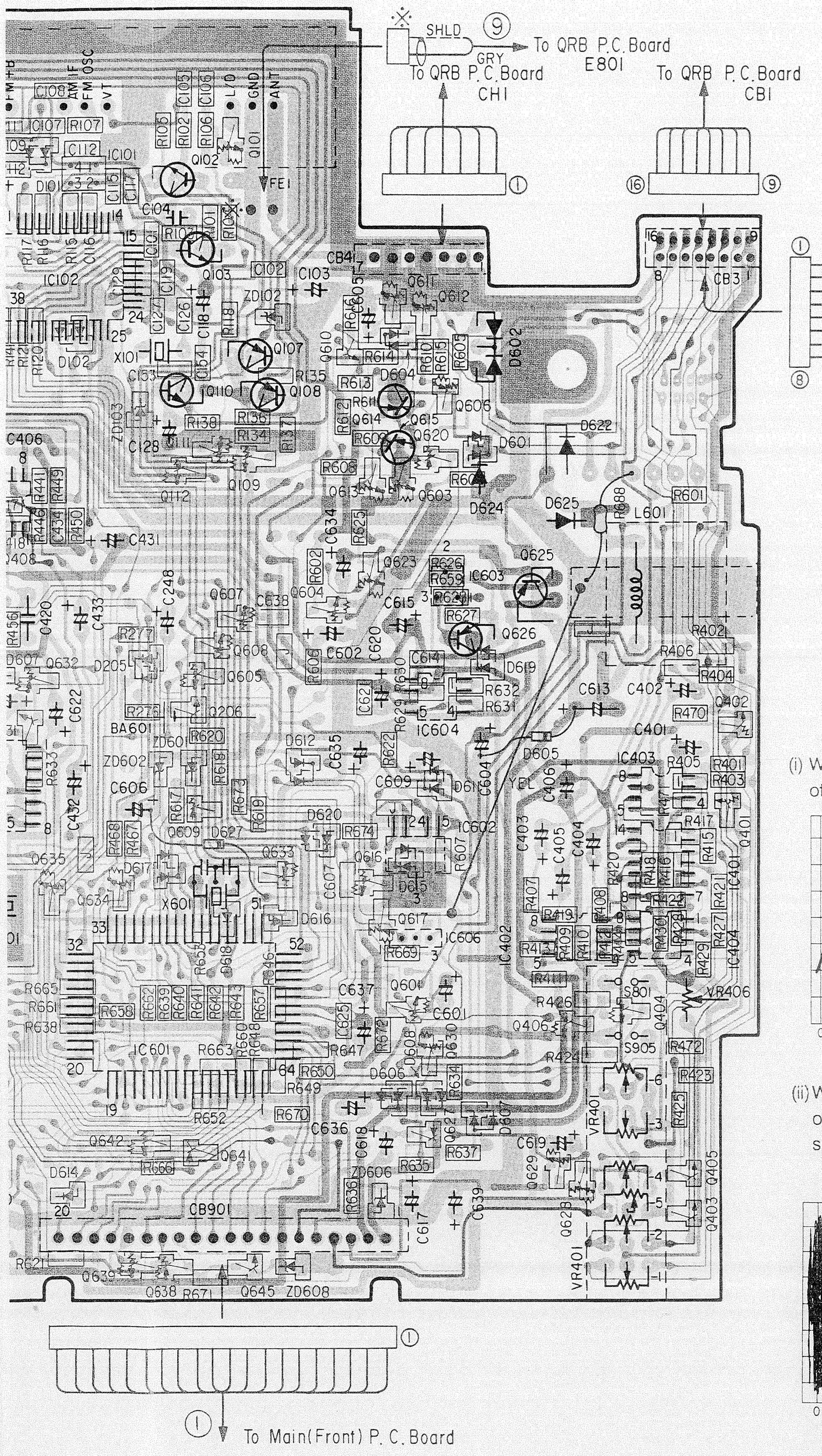
1	0V/5V	23	2.2V/0V	45	PS
2	0V/5V	24	3.6V/0V	46	4.6V/0V
3	0V/5V	25	0V	47	0V/5V
4	0V/5V	26	0V	48	4.6V/0V
5	PS	27	0V	49	5V/0V
6	PS	28	0V	50	4.9V/0V
7	PS	29	3.6V/0V	51	PS
8	PS	30	3.6V/0V	52	PS
9	PS	31	0V/PS	53	PS
10	4.8V	32	0V/4.9V	54	4.9V/0V
11	0V/5V	33	0V/4.2V	55	4.5V/0V
12	4.8V/0V	34	PS	56	4.3V/0V
13	PS	35	4.9V	57	4.3V/0V
14	PS	36	4.9V/0V	58	4.9V
15	PS	37	0V/4.9V	59	4.9V
16	5V/0V	38	4.9V/0V	60	0V
17	0V/5V	39	4.8V/0V	61	0V/4.9V
18	0V/5V	40	4.8V/0V	62	–
19	0V/5V	41	5V/0V	63	–
20	0V/5V	42	0V/PS	64	–
21	3.9V/0V	43	5V/0V		
22	0V/5V	44	PS		

62,63,64
1/6 VDD,2/6 VDD,3/6 VDD,4/6 VDD,5/6 VDD ,VDD

<Foil Side>

▨	ANT Signal Line
▨	CD Signal Line (C
▨	L-ch Signal Line
▨	R-ch Signal Line
▨	ACC +B
▨	Battery +B
▨	GND
▨	Others

A | B | C | D | E | F | G | H



IC101

1	0V
2	3.7V
3	1.5V
4	1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V.
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	
20	PS	44	
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC203

1	PS	13	PS
2	PS	14	PS
3	PS	15	PS
4	PS	16	PS
5	PS	17	PS
6	PS	18	0V
7	PS	19	PS
8	PS	20	PS
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	0V	24	5V

IC204

1	2.3V	11	1.2V
2	2.3V	12	0V
3	2.3V	13	0V
4	2.3V	14	2.3V
5	2.3V	15	0V
6	0V	16	0V
7	0V	17	0V
8	0V	18	0V
9	0.4V	19	0V
10	2.3V	20	1.5V

IC205

1	PS	9	5V
2	PS	10	PS
3	5V	11	PS
4	PS	12	PS
5	PS	13	PS
6	0V	14	PS
7	PS	15	PS
8	0V	16	5V

IC206

1	0.6V
2	5V
3	2.6V
4	0V
5	0.2V/0V
6	0.2V
7	2.8V
8	5V

IC207

1	2V	11	2.2V	21	2.2V
2	2V	12	2.2V	22	2.2V
3	2.2V	13	2.2V	23	2.2V
4	2V	14	0V	24	2.2V
5	2V	15	PS	25	2.2V
6	2V	16	1V	26	2.8V
7	2V	17	PS	27	2.2V
8	5V	18	1V	28	2.2V
9	2V	19	PS	29	2.2V
10	2V	20	2.5V	30	2.2V

IC208

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC209

1	2.5V
2	2.5V
3	2.5V
4	0V
5	4.1V
6	4.1V
7	3.5V
8	8V

IC210

1	0V	9	0V
2	0V	10	0V
3	4.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC211

1	0V	9	0V
2	0V	10	0V
3	2.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC213

1	0V
2	PS
3	0V
4	PS
5	5V

IC214

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC401

1	4.4V	6	8.7V	11	4.4V
2	4.4V	7	0V	12	0V
3	4.4V	8	4.4V	13	0V
4	4.4V	9	4.4V	14	8.7V
5	8.7V	10	4.4V		

IC402

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC409

1	4.7V
2	4.7V
3	3.1V
4	0V
5	3.1V
6	4.7V
7	4.7V
8	8.7V

IC410

1	0V
2	PS
3	0V
4	PS
5	5V

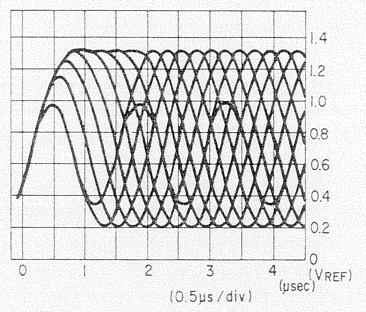
IC201

1	PS	11	PS	21	0V	31	0V	41	PS	51	5V
2	PS	12	PS	22	0V	32	PS	42	PS	52	5V
3	PS	13	PS	23	5V	33	PS	43	PS	53	5V
4	PS	14	PS	24	5V	34	PS	44	PS	54	0V
5	PS	15	PS	25	PS	35	PS	45	PS	55	5V
6	PS	16	PS	26	PS	36	5V	46	0V	56	PS
7	PS	17	PS	27	PS	37	0V	47	PS	57	PS
8	PS	18	5V	28	PS	38	PS	48	PS	58	PS
9	PS	19	5V	29	PS	39	PS	49	5V	59	PS
10	PS	20	0V	30	0V	40	PS	50	5V	60	PS

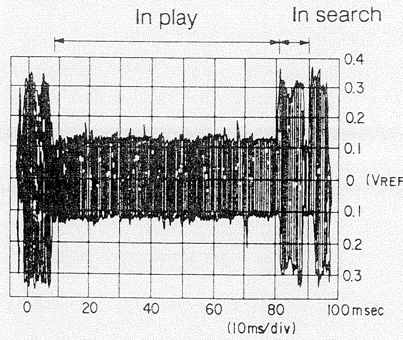
IC202

1	PS	11	PS	21	PS	31	0V/PS	41	0V	51	PS
2	5V/0V	12	2.2V	22	2.2V	32	0V/4.9V	42	PS	52	PS
3	5V/0V	13	2.2V	23	5V	33	0V/4.2V	43	PS	53	PS
4	PS	14	2.2V	24	2.2V	34	PS	44	PS	54	4.9V/0V
5	PS	15	2.2V	25	2.2V	35	4.9V	45	5V	55	4.5V/0V
6	PS	16	2.2V	26	2.2V	36	4.9V/0V	46	5V	56	4.3V/0V
7	2.2V	17	2.2V	27	2V	37	0V/4.9V	47	PS	57	4.3V/0V
8	1V	18	2.2V	28	PS	38	4.9V/0V	48	PS	58	4.9V
9	PS	19	2.6V	29	PS	39	4.8V/0V	49	PS	59	4.9V
10	1V	20	2V	30	2.2V	40	4.8V/0V	50	PS	60	0V

(i) Waveform at RFO terminal (No. 10 pin of IC701, TA8101F), when unit in play.



(ii) Waveform at TSO terminal (No. 22 pin of IC701, TA8101F), when unit in play/search.



IC601

1	0V/5V	23	2.2V/0V	45	PS
2	0V/5V	24	3.6V/0V	46	4.6V/0V
3	0V/5V	25	0V	47	0V/5V
4	0V/5V	26	0V	48	4.6V/0V
5	PS	27	0V	49	5V/0V
6	PS	28	0V	50	4.9V/0V
7	PS	29	3.6V/0V	51	PS
8	PS	30	3.6V/0V	52	PS
9	PS	31	0V/PS	53	PS
10	4.8V	32	0V/4.9V	54	4.9V/0V
11	0V/5V	33	0V/4.2V	55	4.5V/0V
12	4.8V/0V	34	PS	56	4.3V/0V
13	PS	35	4.9V	57	4.3V/0V
14	PS	36	4.9V/0V	58	4.9V
15	PS	37	0V/4.9V	59	4.9V
16	5V/0V	38	4.9V/0V	60	0V
17	0V/5V	39	4.8V/0V	61	0V/4.9V
18	0V/5V	40	4.8V/0V	62	–
19	0V/5V	41	5V/0V	63	–
20	0V/5V	42	0V/PS	64	–
21	3.9V/0V	43	5V/0V		
22	0V/5V	44	PS		

62,63,64
1/6 VDD,2/6 VDD,3/6 VDD,4/6 VDD,5/6 VDD ,VDD

IC602

1	14V
2	7.8V
3	0.6V
4	5.7V
5	5.7V

IC603

1	13.5V
2	0V
3	1.3V

IC604

1	8.2V
2	0.4V
3	2.4V
4	0V
5	4.3V
6	4.4V
7	4.4V
8	8.7V

IC605

1	PS
2	0V
3	PS
4	0V
5	1.3V
6	13.9V
7	13.9V
8	PS

IC606

1	5V/0V
2	5V
3	0V

IC607

1	4V
2	1V
3	4V
4	0V
5	3V
6	1V
7	4V
8	4.6V

	E	C	B		E	C	B
Q101	0V	6.6V/0V	4.7V/0V	Q606	14V	14V	0V
Q102	0.1V	1.1V~7.4V	0.7V	Q607	0V/0V	4.7V/0V	0V/14.4V
Q103	0.7V	9.4V	1.1V	Q608	0V/0V	4.7V/0V	0V/14.4V
Q105	0V	0V	6.7V/0V	Q609	14.2V	14.2V	7.3V
Q106	0V	0V/7.7V	0V/4.7V	Q610	14V	14V	13.3V
Q107	8.8V	8.7V/0V	8.8V/8.1V	Q611	0V	0V	10V
Q108	8.8V	8.8V/1.4V	8.6V/8.1V	Q612	0V	0V	9.7V
Q109	0V	8.6V/0V	4.4V/1V	Q613	0V	0.1V	4.3V
Q110	8.8V	14V	9.4V	Q614	14V	14V	13.3V
Q111	0V/13V	13.9V/0V	0V/14V	Q615	14V	14V	13.4V
Q112	0V	0V/13.6V	5.1V/0V	Q616	0V	0V	4.5V
Q113	8.6V	13.7V	9.2V	Q617	5.1V	4.9V	0V
Q115	1V	2.9V	1.6V	Q618	0V	4V	0V
Q116	0V	3.3V	0.6V	Q619	7.6V	14V	8.2V
Q201	3.6V	1.9V	3V	Q621	0V	0V	3.9V
Q202	5.2V	0.3V	5.1V	Q922	5.1V	8.3V	5.7V
Q203	0V	2.2V	0V	Q623	0V	0.4V	3.3V
Q204	14V	0V	3.4V	Q625	14.1V	14.1V	13.4V
Q205	0V	14V	0V	Q626	14.1V	8.7V	13.5V
Q206	0V	0V	0V	Q627	10V	0.3V	10V
Q207	4.1V	8.3V	4.7V	Q629	0V	14V	0V
Q208	3.5V	4.7V	4.1V	Q630	0V	0V	4.3V
Q209	0V	4.1V	3.5V	Q631	2.4V	8.7V	3V
Q210	2.2V/2.2V	2.3V/2.3V	4.8V/0V	Q632	3V	0V	0V
Q211	2.3V	2.3V	5V	Q633	5.7V	4.5V	5.7V
PT301	0V	5V/0V	–	Q634	0V	8.7V	0V
PT302	0V	5V/0V	–	Q636	14.2V	14.1V	0V
PT303	0V	5V/0V	–	Q637	13.8V	PS	PS
PT304	0V	5V/0V	–	Q638	14V	13.1V	0V
Q401	0V	0V	0.2V	Q639	0V	0V	5V
Q402	0V	0V	0.2V	Q641	7.6V	7.4V	6.8V
Q404	0V	8.7V	0V	Q642	0V	0.2V	2.2V
Q406	0V	0V	3.5V	Q645	12.2V	13.3V	12.9V
Q407	0V	SIG	0V	Q646	5.7V	5.1V	4.9V
Q408	0V	SIG	0V	Q403	0V	0V	1V
Q601	0V/0V	4.8V/0V	0V/8.1V	Q405	0V	0V	1V
Q605	0V	0V	3.8V	Q603	0V	14V	4.9V
Q104	0V	0V	0.8V	Q604	0V	14V	1V
Q117	4.1V	4.1V	4.9V	Q628	14V	0.3V	14V
Q118	4.1V	4.1V	4.9V	Q620	14V	0V	14V

(Measuring Conditions)

1. Power Supply : 14V DC
2. Measuring Tool : Digital Multi Voltmeter.
3. Measuring Standard : Ground=0V
4. Unit Condition : Be playing back the 2nd. Music of the test CD(YEDS–18).

<Foil Side>

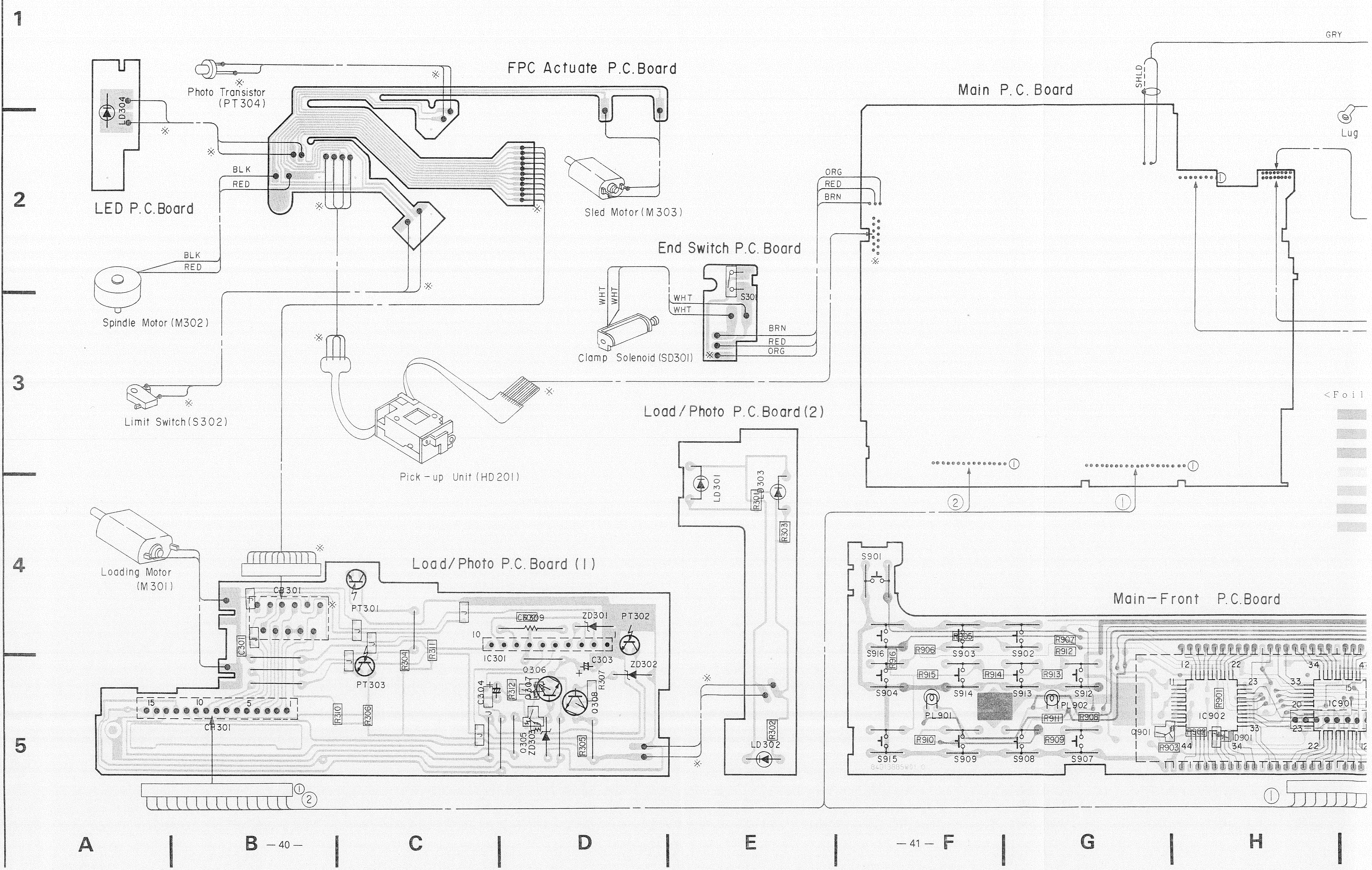
- ▨ ANT Signal Line
- ▨ CD Signal Line (Digital)
- ▨ L-ch Signal Line
- ▨ R-ch Signal Line
- ▨ ACC +B
- ▨ Battery +B
- ▨ GND
- ▨ Others

<Component Side>

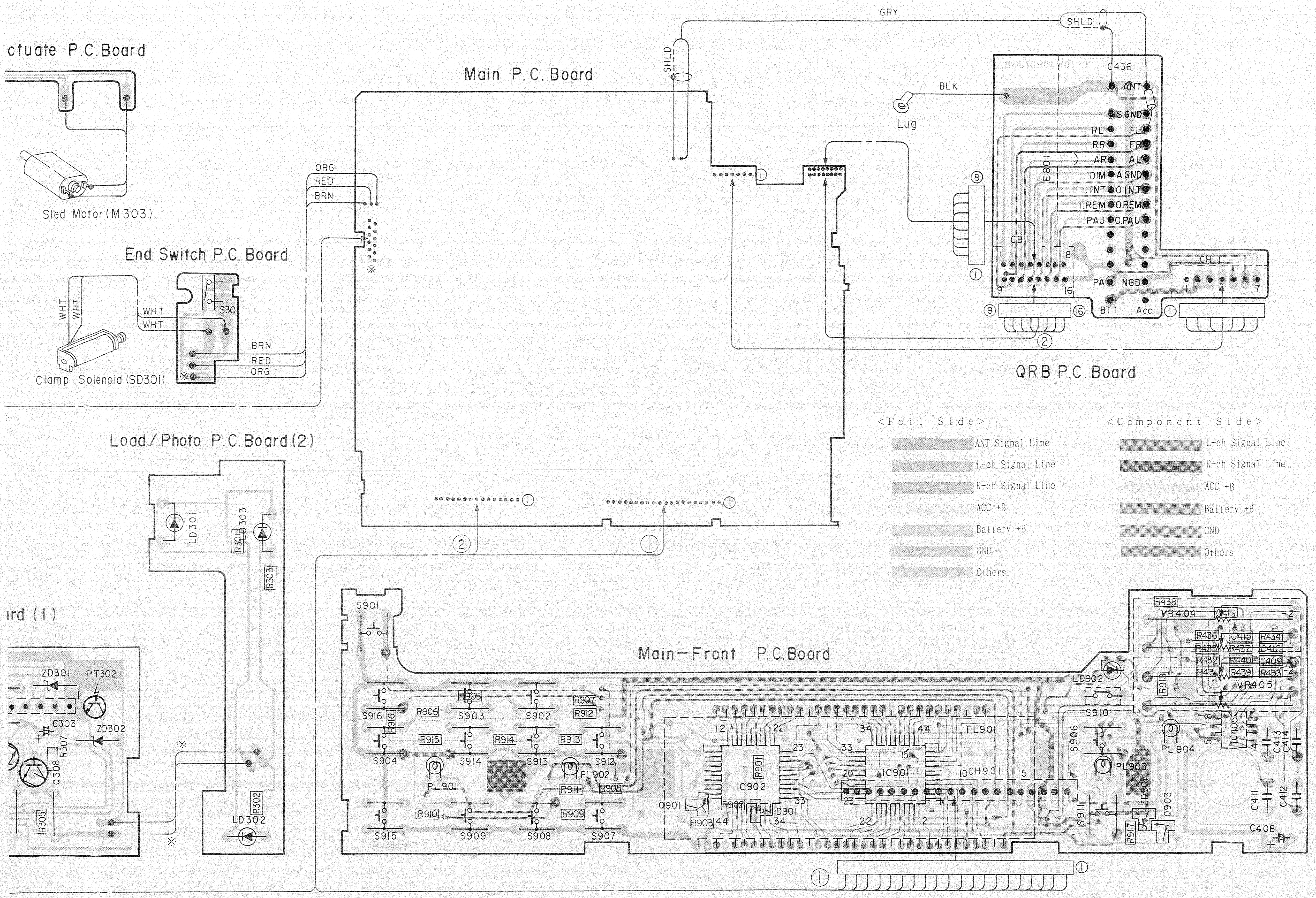
- ▨ CD Signal Line (Digital)
- ▨ L-ch Signal Line
- ▨ R-ch Signal Line
- ▨ ACC +B
- ▨ Battery +B
- ▨ GND
- ▨ Others

BLU	Blue
GRN	Green
BLK	Black
GRY	Gray
WHT	White
RED	Red
BRN	Brown
ORG	Orange
YEL	Yellow
PNK	Pink
VIO	Violet
GRN/WHT	Green/White
GRY/WHT	Gray/White
GRY/YEL	Gray/Yellow
GRN/YEL	Green/Yellow
SHLD	Shield

Parts Layout on P.C. Boards and Wiring Diagram (2/2)


1
2
3
4
5
FPC Actuate P.C.Board
Photo Transistor (PT304)
LD304
LED P.C.Board
BLK
RED
Spindle Motor (M302)
Limit Switch (S302)
Sled Motor (M303)
End Switch P.C.Board
S301
WHT
WHT
BRN
RED
ORG
Clamp Solenoid (SD301)
Pick-up Unit (HD201)
Main P.C.Board
GRY
SHLD
Lug
ORG
RED
BRN
<Foil
Load/Photo P.C.Board (2)
LD301
LD303
R301
R303
R302
LD302
Loading Motor (M301)
Load/Photo P.C.Board (1)
CP301
C301
PT301
PT303
R304
R311
R310
R306
IC301
10
C309
ZD301
PT302
C303
ZD302
Q306
C304
R312
Q307
Q308
R307
Q305
ZD303
R305
15
10
5
1
CP301
①
②
Main-Front P.C.Board
S901
S916
R916
R906
R905
S903
S902
R907
R912
R915
R914
R913
S904
S914
S913
S912
PL901
PL902
R911
R908
R910
R909
S915
S909
S908
S907
IC902
R901
IC901
Q901
R902
R903
D901
12
22
23
33
34
11
44
20
15
A
B
C
D
E
F
G
H

n (2/2)


ctuate P.C.Board
Sled Motor (M303)
End Switch P.C.Board
S301
WHT
WHT
WHT
WHT
BRN
RED
ORG
Clamp Solenoid (SD301)
※
ORG
RED
BRN
Main P.C.Board
SHLD
GRY
SHLD
BLK
Lug
①
⑧
①
⑨
⑯
②
①
②
①
84C10904W01-0
Q436
ANT
S.GND
RL
FL
RR
FR
AR
AL
DIM
A.GND
I.INT
O.INT
I.REM
O.REM
I.PAU
O.PAU
E801
CB1
1
8
9
16
PA
NGD
BTT
Acc
CH1
1
4
7
QRB P.C.Board
Load/Photo P.C.Board (2)
LD301
LD303
R301
R303
R302
LD302
rd (1)
ZD301
PT302
C303
ZD302
R307
Q308
R305
※
※
Main-Front P.C.Board
S901
S916
R916
R906
R905
S903
S902
R907
R912
R915
R914
R913
S904
S914
S913
S912
PL901
PL902
R911
R908
R910
S915
S909
R909
S908
S907
84013885W01-0
12
22
34
44
11
23
33
IC902
R901
Q901
R903
R902
44
1
ID901
34
33
22
12
1
20
23
IC901
15
5
10
CH901
5
FL901
LD902
S910
S906
PL903
ZD901
Q903
S911
R917
PL904
R918
R438
VR404
C415
R436
C415
R434
R435
R437
C410
R432
R440
C409
R431
R439
R433
VR405
8
5
4
IC405
C413
C414
C411
C412
C408
2
1
2
1

<Foil Side>

- ▨ ANT Signal Line
- ▨ L-ch Signal Line
- ▨ R-ch Signal Line
- ▨ ACC +B
- ▨ Battery +B
- ▨ GND
- ▨ Others

<Component Side>

- ▨ L-ch Signal Line
- ▨ R-ch Signal Line
- ▨ ACC +B
- ▨ Battery +B
- ▨ GND
- ▨ Others

BLU	Blue
GRN	Green
BLK	Black
GRY	Gray
WHT	White
RED	Red
BRN	Brown
ORG	Orange
YEL	Yellow
PNK	Pink
VIO	Violet
GRN/WHT	Green/White
GRY/WHT	Gray/White
GRY/YEL	Gray/Yellow
GRN/YEL	Green/Yellow
SHLD	Shield

	E	C	B
Q305	0V	0V/13.9V	3.6V/0V
Q306	14V/0.7V	10.7V/0V	0V/13.9V
Q307	10.1V	14V	10.7V
Q308	5.1V/0V	10.1V/0V	5.8V/0V
Q901	0.7V	2V	1.4V
Q903	6.1V	7.4V	6.7V

IC301

1	0V
2	0V/6V
3	8V/0V
4	6V/0V
5	2V/0V
6	2V/0V
7	10V/0V
8	10V/0V
9	8V/0V
10	0V/6V

IC405

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

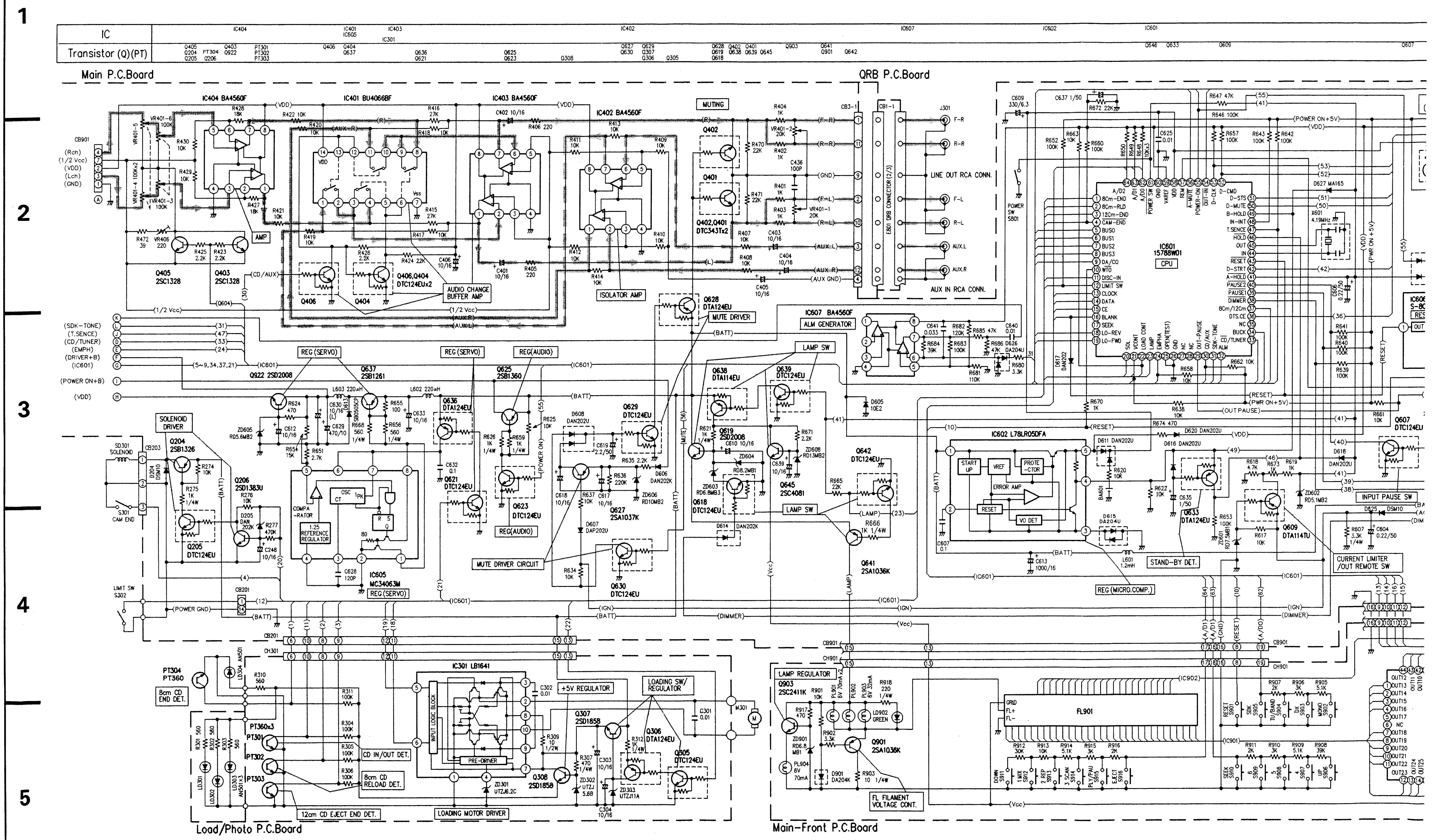
IC901

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

IC902

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30			

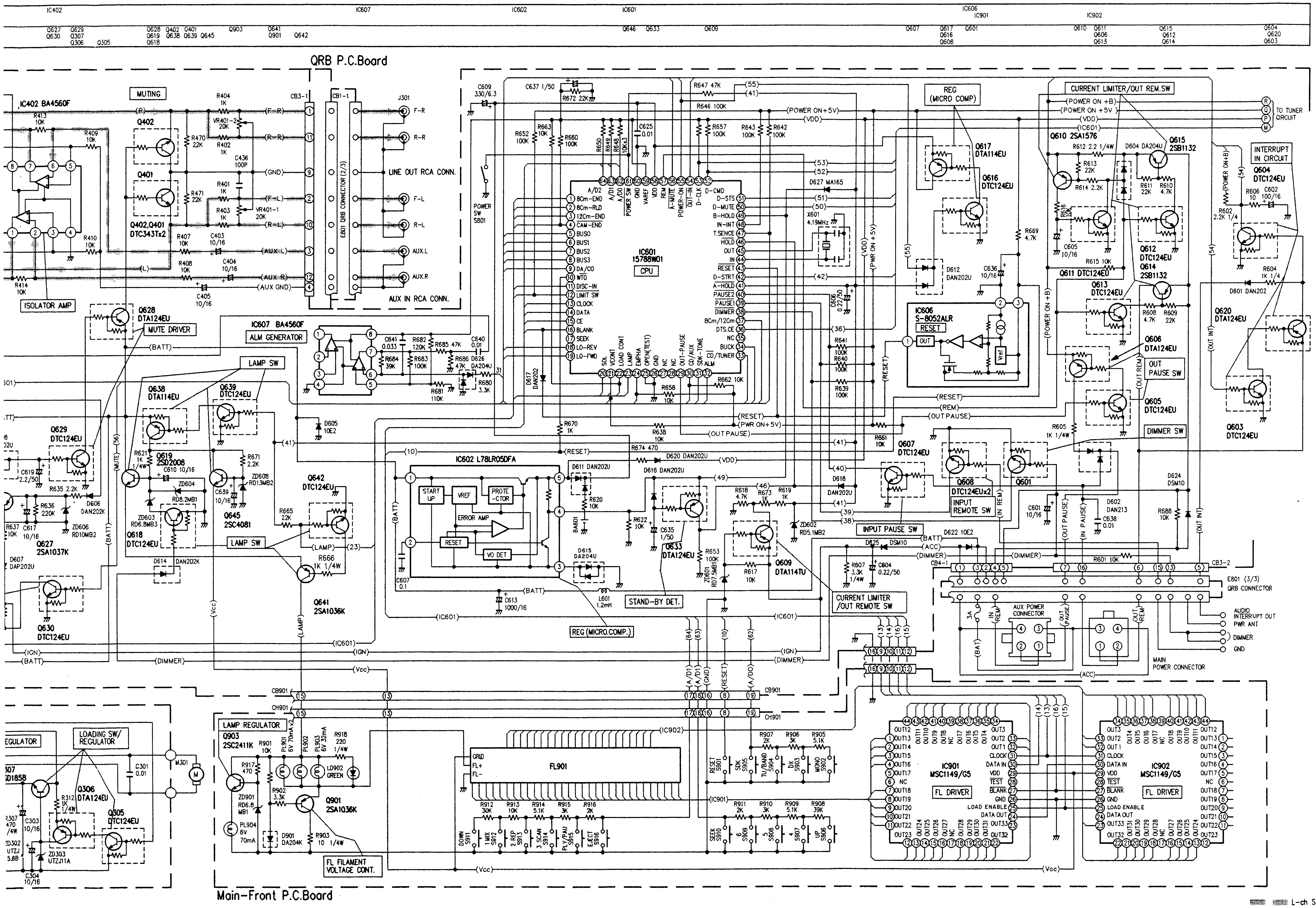
Schematic Diagram (1/3)


1
2
3
4
5
IC
Transistor (Q)(PT)
Main P.C.Board
QRB P.C.Board
Load/Photo P.C.Board
Main-Front P.C.Board
IC404 BA4560F
IC401 BU4066BF
IC403 BA4560F
IC402 BA4560F
MUTING
Q402
Q401
Q402,Q401 DTC343Tx2
CB901
(Rch)
(1/2 Vcc)
(VDD)
(Lch)
(GND)
VR401-4 100Kx2
AMP
Q405 2SC1328
Q403 2SC1328
Q406,Q404 DTC124EUx2
AUDIO CHANGE BUFFER AMP
ISOLATOR AMP
Q628 DTA124EU
MUTE DRIVER
LINE OUT RCA CONN.
AUX IN RCA CONN.
E801 QRB CONNECTOR (2/3)
J301
IC607 BA4560F
ALM GENERATOR
LAMP SW
REG(SERVO)
REG(AUDIO)
Q922 2SD2008
Q637 2SB1261
Q625 2SB1360
Q636 DTA124EU
Q621 DTC124EU
Q623 DTC124EU
Q629 DTC124EU
Q627 2SA1037K
Q630 DTC124EU
MUTE DRIVER CIRCUIT
Q638 DTA114EU
Q639 DTC124EU
Q619 2SD2008
Q618 DTC124EU
Q645 2SC4081
Q642 DTC124EU
Q641 2SA1036K
SOLENOID DRIVER
SD301 SOLENOID
Q204 2SB1326
Q206 2SD1383U
Q205 DTC124EU
S301 CAM END
LIMIT SW S302
COMPA-RATOR
1.25 REFERENCE REGULATOR
IC605 MC34063M
REG(SERVO)
IC601 15788W01 CPU
POWER SW S801
IC602 L78LR05DFA
START UP
VREF
PROTE-CTOR
ERROR AMP
RESET
VO DET
REG(MICRO.COMP.)
STAND-BY DET.
Q633 DTA124EU
Q609 DTA114TU
Q607 DTC124EU
INPUT PAUSE SW
CURRENT LIMITER /OUT REMOTE SW
PT304 PT360
8cm CD END DET.
PT360x3
CD IN/OUT DET.
8cm CD RELOAD DET.
12cm CD EJECT END DET.
IC301 LB1641
INPUT LOGIC BLOCK
PRE-DRIVER
LOADING MOTOR DRIVER
+5V REGULATOR
Q307 2SD1858
Q308 2SD1858
LOADING SW/ REGULATOR
Q306 DTA124EU
Q305 DTC124EU
M301
LAMP REGULATOR
Q903 2SC2411K
Q901 2SA1036K
FL FILAMENT VOLTAGE CONT.
FL901
CB201
CH301
CB901
CH901

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

A | B | C | D | E | F | G | H


IC402
IC607
IC602
IC601
IC606
IC901
IC902
QRB P.C.Board
IC402 BA4560F
MUTING
ISOLATOR AMP
MUTE DRIVER
LINE OUT RCA CONN.
AUX IN RCA CONN.
E801 QRB CONNECTOR (2/3)
IC607 BA4560F
ALM GENERATOR
LAMP SW
IC601 15788W01 CPU
IC602 L78LR05DFA
START UP
VREF
PROTE -CTOR
ERROR AMP
RESET
VO DET
REG (MICRO.COMP.)
STAND-BY DET.
REG (MICRO COMP)
IC606 S-8052ALR
RESET
INPUT PAUSE SW
INPUT REMOTE SW
CURRENT LIMITER/OUT REM.SW
CURRENT LIMITER /OUT REMOTE SW
INTERRUPT IN CIRCUIT
OUT PAUSE SW
DIMMER SW
TO TUNER CIRCUIT
E801 (3/3) QRB CONNECTOR
AUX POWER CONNECTOR
MAIN POWER CONNECTOR
AUDIO INTERRUPT OUT
PWR ANT
DIMMER
GND
POWER SW S801
LAMP REGULATOR
Q903 2SC2411K
FL901
FL FILAMENT VOLTAGE CONT.
LOADING SW/ REGULATOR
IC901 MSC1149/G5
FL DRIVER
IC902 MSC1149/G5
FL DRIVER
Main-Front P.C.Board

L-ch Signal Line
R-ch Signal Line

	E	C	B		E	C	B
Q636	14.2V	14.1V	0V	Q629	0V	14V	0V
Q637	13.8V	PS	PS	Q630	0V	0V	4.3V
Q638	14V	13.1V	0V	Q633	5.7V	4.5V	5.7V
Q639	0V	0V	5V	PT301	0V	5V/0V	–
Q628	14V	0.3V	14V	PT302	0V	5V/0V	–
Q641	7.6V	7.4V	6.8V	PT303	0V	5V/0V	–
Q642	0V	0.2V	2.2V	PT304	0V	5V/0V	–
Q645	12.2V	13.3V	12.9V	Q305	0V	0V/13.9V	3.6V/0V
Q601	0V/0V	4.8V/0V	0V/8.1V	Q307	10.1V	14V	10.7V
Q605	0V	0V	3.8V	Q308	5.1V/0V	10.1V/0V	5.8V/0V
Q606	14V	14V	0V	Q401	0V	0V	0.2V
Q607	0V/0V	4.7V/0V	0V/14.4V	Q402	0V	0V	0.2V
Q608	0V/0V	4.7V/0V	0V/14.4V	Q404	0V	8.7V	0V
Q609	14.2V	14.2V	7.3V	Q901	0.7V	2V	1.4V
Q610	14V	14V	13.3V	Q903	6.1V	7.4V	6.7V
Q611	0V	0V	10V	Q204	14V	0V	3.4V
Q612	0V	0V	9.7V	Q205	0V	14V	0V
Q613	0V	0.1V	4.3V	Q206	0V	0V	0V
Q614	14V	14V	13.3V	Q406	0V	0V	3.5V
Q615	14V	14V	13.4V	Q306	14V/0.7V	10.7V/0V	0V/13.9V
Q616	0V	0V	4.5V	Q647	0V	0V/14.4V	0V/5V
Q617	5.1V	4.9V	0V	Q403	0V	0V	1V
Q618	0V	4V	0V	Q405	0V	0V	1V
Q619	7.6V	14V	8.2V	Q603	0V	14V	4.9V
Q621	0V	0V	3.9V	Q604	0V	14V	0V
Q922	5.1V	8.3V	5.7V	Q620	14V	0V	14V
Q623	0V	0.4V	3.3V				
Q625	14.1V	14.1V	13.4V				
Q627	10V	0.3V	10V				

IC602

1	14V
2	7.8V
3	0.6V
4	5.7V
5	5.7V

IC401

1	4.4V	6	8.7V	11	4.4V
2	4.4V	7	0V	12	0V
3	4.4V	8	4.4V	13	0V
4	4.4V	9	4.4V	14	8.7V
5	8.7V	10	4.4V		

IC301

1	0V
2	0V/6V
3	8V/0V
4	6V/0V
5	2V/0V
6	2V/0V
7	10V/0V
8	10V/0V
9	8V/0V
10	0V/6V

IC901

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V .	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

IC607

1	4V
2	1V
3	4V
4	0V
5	3V
6	1V
7	4V
8	4.6V

IC402

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC902

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30			

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC606

1	5V/0V
2	5V
3	0V

IC601

1	0V/5V	23	2.2V/0V	45	PS
2	0V/5V	24	3.6V/0V	46	4.6V/0V
3	0V/5V	25	0V	47	0V/5V
4	0V/5V	26	0V	48	4.6V/0V
5	PS	27	0V	49	5V/0V
6	PS	28	0V	50	4.9V/0V
7	PS	29	3.6V/0V	51	PS
8	PS	30	3.6V/0V	52	PS
9	PS	31	0V/PS	53	PS
10	4.8V	32	0V/4.9V	54	4.9V/0V
11	0V/5V	33	0V/4.2V	55	4.5V/0V
12	4.8V/0V	34	PS	56	4.3V/0V
13	PS	35	4.9V	57	4.3V/0V
14	PS	36	4.9V/0V	58	4.9V
15	PS	37	0V/4.9V	59	4.9V
16	5V/0V	38	4.9V/0V	60	0V
17	0V/5V	39	4.8V/0V	61	0V/4.9V
18	0V/5V	40	4.8V/0V	62	–
19	0V/5V	41	5V/0V	63	–
20	0V/5V	42	0V/PS	64	–
21	3.9V/0V	43	5V/0V		
22	0V/5V	44	PS		

62,63,64
1/6 VDD,2/6 VDD,3/6 VDD,4/6 VDD,5/6 VDD ,VDD

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

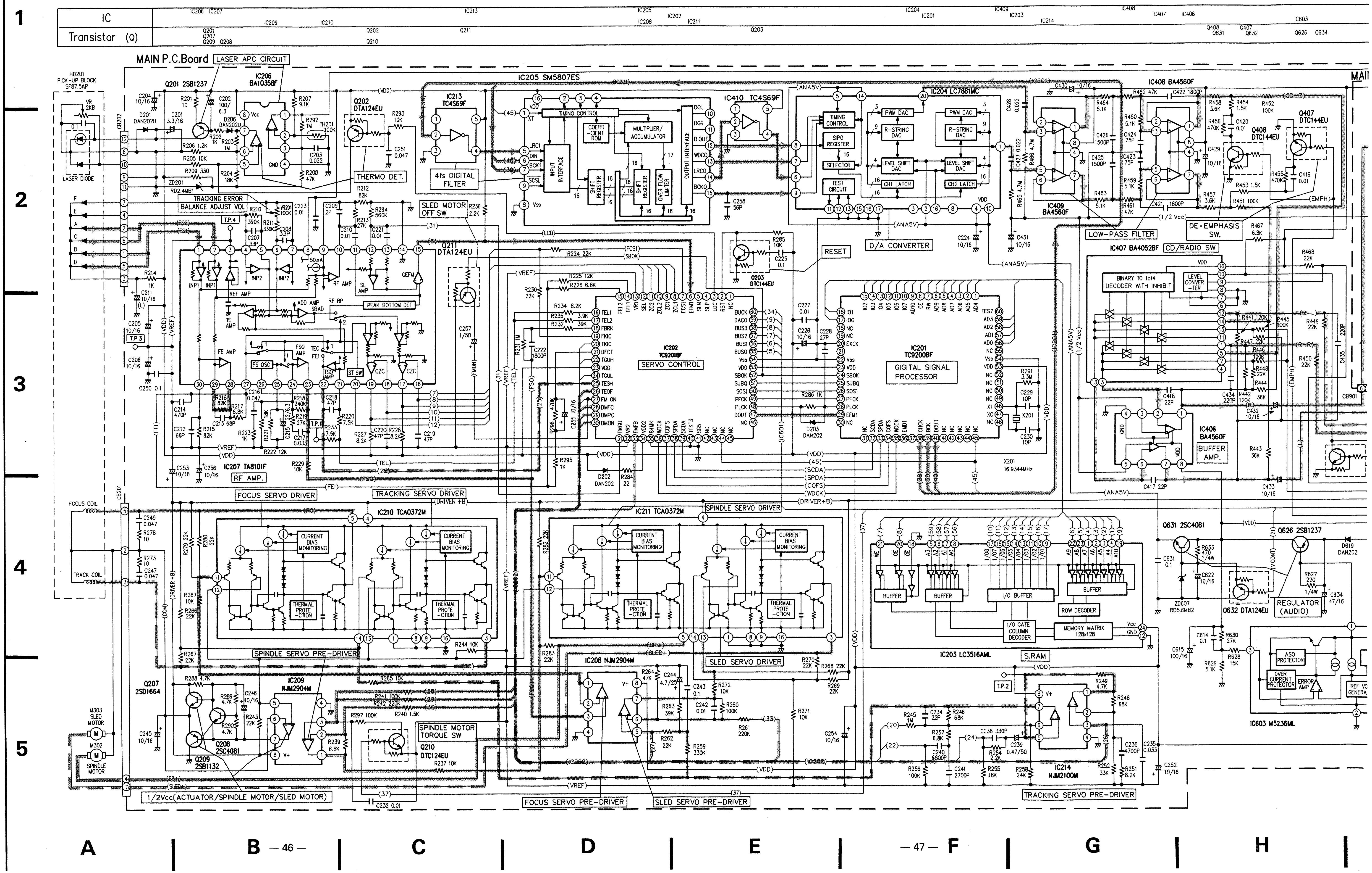
IC605

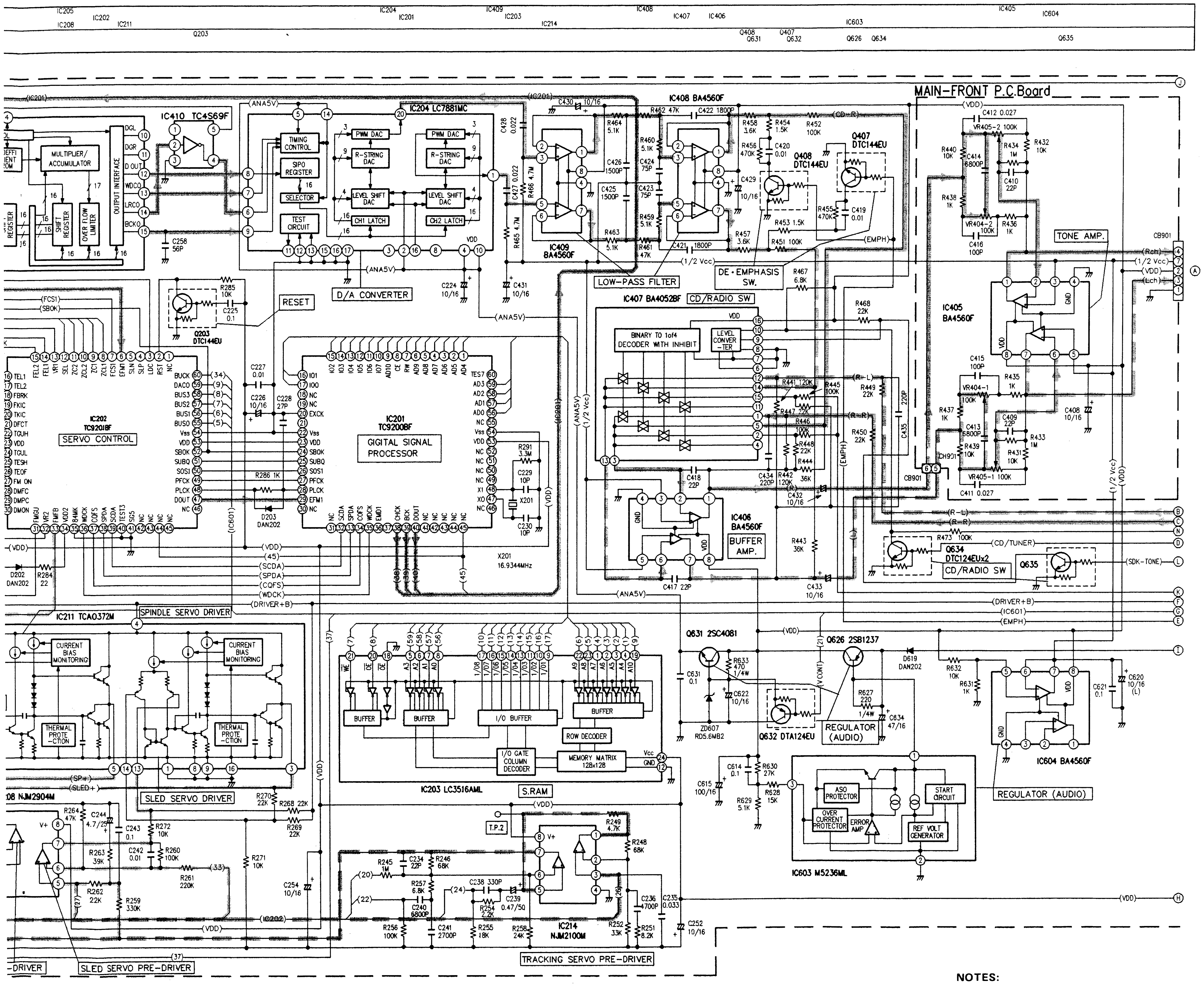
1	PS
2	0V
3	PS
4	0V
5	1.3V
6	13.9V
7	13.9V
8	PS

<Measuring Conditions>
1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be Playing back the 2nd. Music of the test CD(YEDS-18).

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1{,}000{,}000}$

Schematic Diagram (2/3)


IC
Transistor (Q)
MAIN P.C.Board
LASER APC CIRCUIT
HD201 PICK-UP BLOCK SF87.5AP
LASER DIODE
Q201 2SB1237
IC206 BA10358F
Q202 DTA124EU
THERMO DET.
IC213 TC4S69F
4fs DIGITAL FILTER
IC205 SM5807ES
TIMING CONTROL
COEFFICIENT ROM
MULTIPLIER/ACCUMULATOR
INPUT INTERFACE
SHIFT REGISTER
OVER FLOW LIMITER
OUTPUT INTERFACE
IC410 TC4S69F
IC204 LC7881MC
TIMING CONTROL
SIPO REGISTER
SELECTOR
TEST CIRCUIT
PWM DAC
R-STRING DAC
LEVEL SHIFT DAC
CH1 LATCH
CH2 LATCH
D/A CONVERTER
IC409 BA4560F
IC408 BA4560F
LOW-PASS FILTER
DE-EMPHASIS SW.
Q407 DTC144EU
Q408 DTC144EU
TRACKING ERROR BALANCE ADJUST VOL
SLED MOTOR OFF SW
Q211 DTA124EU
RESET
Q203 DTC144EU
IC202 TC9201BF
SERVO CONTROL
IC201 TC9200BF
DIGITAL SIGNAL PROCESSOR
X201 16.9344MHz
IC407 BA4052BF
CD/RADIO SW
BINARY TO 1of4 DECODER WITH INHIBIT
LEVEL CONVERTER
IC406 BA4560F
BUFFER AMP.
IC207 TA8101F
RF AMP.
FOCUS SERVO DRIVER
TRACKING SERVO DRIVER
IC210 TCA0372M
IC211 TCA0372M
SPINDLE SERVO DRIVER
CURRENT BIAS MONITORING
THERMAL PROTECTION
FOCUS COIL
TRACK COIL
SPINDLE SERVO PRE-DRIVER
SLED SERVO DRIVER
IC208 NJM2904M
IC209 NJM2904M
Q207 2SD1664
Q208 2SC4081
Q209 2SB1132
M303 SLED MOTOR
M302 SPINDLE MOTOR
SPINDLE MOTOR TORQUE SW
Q210 DTC124EU
1/2Vcc(ACTUATOR/SPINDLE MOTOR/SLED MOTOR)
FOCUS SERVO PRE-DRIVER
SLED SERVO PRE-DRIVER
IC203 LC3516AML
S.RAM
BUFFER
I/O BUFFER
ROW DECODER
I/O GATE COLUMN DECODER
MEMORY MATRIX 128x128
IC214 NJM2100M
TRACKING SERVO PRE-DRIVER
Q631 2SC4081
Q626 2SB1237
Q632 DTA124EU
ZD607 RD5.6MB2
REGULATOR (AUDIO)
IC603 M5236ML
ASO PROTECTOR
OVER CURRENT PROTECTOR
ERROR AMP
1
2
3
4
5
A
B
C
D
E
F
G
H


MAIN-FRONT P.C.Board
IC410 TC4S69F
IC204 LC7881MC
PWM DAC
R-STRING DAC
LEVEL SHIFT DAC
CH1 LATCH
CH2 LATCH
TIMING CONTROL
SIPO REGISTER
SELECTOR
TEST CIRCUIT
D/A CONVERTER
MULTIPLIER/ ACCUMULATOR
SHIFT REGISTER
OVER FLOW LIMITER
OUTPUT INTERFACE
RESET
Q203 DTC144EU
IC202 TC9201BF
SERVO CONTROL
IC201 TC9200BF
DIGITAL SIGNAL PROCESSOR
X201 16.9344MHz
IC409 BA4560F
IC408 BA4560F
LOW-PASS FILTER
DE-EMPHASIS SW.
Q408 DTC144EU
Q407 DTC144EU
IC407 BA4052BF
CD/RADIO SW
BINARY TO 1of4 DECODER WITH INHIBIT
LEVEL CONVER -TER
IC406 BA4560F
BUFFER AMP.
IC405 BA4560F
TONE AMP.
Q634 DTC124EUx2
CD/RADIO SW
Q635
IC211 TCA0372M
SPINDLE SERVO DRIVER
CURRENT BIAS MONITORING
THERMAL PROTE -CTION
SLED SERVO DRIVER
IC208 NJM2904M
SLED SERVO PRE-DRIVER
IC203 LC3516AML
BUFFER
I/O BUFFER
ROW DECODER
I/O GATE COLUMN DECODER
MEMORY MATRIX 128x128
S.RAM
IC214 NJM2100M
TRACKING SERVO PRE-DRIVER
T.P.2
Q631 2SC4081
Q626 2SB1237
Q632 DTA124EU
REGULATOR (AUDIO)
ZD607 RD5.6MB2
D619 DAN202
IC603 M5236ML
ASO PROTECTOR
OVER CURRENT PROTECTOR
ERROR AMP
START CIRCUIT
REF VOLT GENERATOR
IC604 BA4560F
REGULATOR (AUDIO)
CB901
(Rch)
(1/2 Vcc)
(VDD)
(Lch)
(CD/TUNER)
(SDK-TONE)
(DRIVER+B)
(IC601)
(EMPH)
(VDD)

IC201

1	PS	11	PS	21	0V	31	0V	41	PS	51	5V
2	PS	12	PS	22	0V	32	PS	42	PS	52	5V
3	PS	13	PS	23	5V	33	PS	43	PS	53	5V
4	PS	14	PS	24	5V	34	PS	44	PS	54	0V
5	PS	15	PS	25	PS	35	PS	45	PS	55	5V
6	PS	16	PS	26	PS	36	5V	46	0V	56	PS
7	PS	17	PS	27	PS	37	0V	47	PS	57	PS
8	PS	18	5V	28	PS	38	PS	48	PS	58	PS
9	PS	19	5V	29	PS	39	PS	49	5V	59	PS
10	PS	20	0V	30	0V	40	PS	50	5V	60	PS

IC203

1	PS	13	PS
2	PS	14	PS
3	PS	15	PS
4	PS	16	PS
5	PS	17	PS
6	PS	18	0V
7	PS	19	PS
8	PS	20	PS
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	0V	24	5V

IC202

1	PS	11	PS	21	PS	31	0V/PS	41	0V	51	PS
2	5V/0V	12	2.2V	22	2.2V	32	0V/4.9V	42	PS	52	PS
3	5V/0V	13	2.2V	23	5V	33	0V/4.2V	43	PS	53	PS
4	PS	14	2.2V	24	2.2V	34	PS	44	PS	54	4.9V/0V
5	PS	15	2.2V	25	2.2V	35	4.9V	45	5V	55	4.5V/0V
6	PS	16	2.2V	26	2.2V	36	4.9V/0V	46	5V	56	4.3V/0V
7	2.2V	17	2.2V	27	2V	37	0V/4.9V	47	PS	57	4.3V/0V
8	1V	18	2.2V	28	PS	38	4.9V/0V	48	PS	58	4.9V
9	PS	19	2.6V	29	PS	39	4.8V/0V	49	PS	59	4.9V
10	1V	20	2V	30	2.2V	40	4.8V/0V	50	PS	60	0V

IC204

1	2.3V	11	1.2V
2	2.3V	12	0V
3	2.3V	13	0V
4	2.3V	14	2.3V
5	2.3V	15	0V
6	0V	16	0V
7	0V	17	0V
8	0V	18	0V
9	0.4V	19	0V
10	2.3V	20	1.5V

IC205

1	PS	9	5V
2	PS	10	PS
3	5V	11	PS
4	PS	12	PS
5	PS	13	PS
6	0V	14	PS
7	PS	15	PS
8	0V	16	5V

IC206

1	0.6V
2	5V
3	2.6V
4	0V
5	0.2V/0V
6	0.2V
7	2.8V
8	5V

IC207

1	2V	11	2.2V	21	2.2V
2	2V	12	2.2V	22	2.2V
3	2.2V	13	2.2V	23	2.2V
4	2V	14	0V	24	2.2V
5	2V	15	PS	25	2.2V
6	2V	16	1V	26	2.8V
7	2V	17	PS	27	2.2V
8	5V	18	1V	28	2.2V
9	2V	19	PS	29	2.2V
10	2V	20	2.5V	30	2.2V

IC208

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC209

1	2.5V
2	2.5V
3	2.5V
4	0V
5	4.1V
6	4.1V
7	3.5V
8	8V

IC210

1	0V	9	0V
2	0V	10	0V
3	4.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC211

1	0V	9	0V
2	0V	10	0V
3	2.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC213

1	0V
2	PS
3	0V
4	PS
5	5V

IC214

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC405

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC409

1	4.7V
2	4.7V
3	3.1V
4	0V
5	3.1V
6	4.7V
7	4.7V
8	8.7V

IC410

1	0V
2	PS
3	0V
4	PS
5	5V

IC603

1	13.5V
2	0V
3	1.3V

IC604

1	8.2V
2	0.4V
3	2.4V
4	0V
5	4.3V
6	4.4V
7	4.4V
8	8.7V

	E	C	B
Q201	3.6V	1.9V	3V
Q202	5.2V	0.3V	5.1V
Q203	0V	2.2V	0V
Q210	2.2V/2.2V	2.3V/2.3V	4.8V/0V
Q407	0V	SIG	0V
Q408	0V	SIG	0V
Q626	14.1V	8.7V	13.5V
Q631	2.4V	8.7V	3V
Q632	3V	0V	0V
Q634	0V	8.7V	0V
Q211	2.3V	2.3V	5V
Q635			

	E	C	B
Q207	4.1V	8.3V	4.7V
Q208	3.5V	4.7V	4.1V
Q209	0V	4.1V	3.5V

▬ CD signal line (Digital)
▬ L-ch signal line
▬ R-ch signal line
▬ Focus servo signal line
▬ Tracking servo signal line
▬ Spindle servo signal line
▬ Sled servo signal line

[Measuring Conditions]

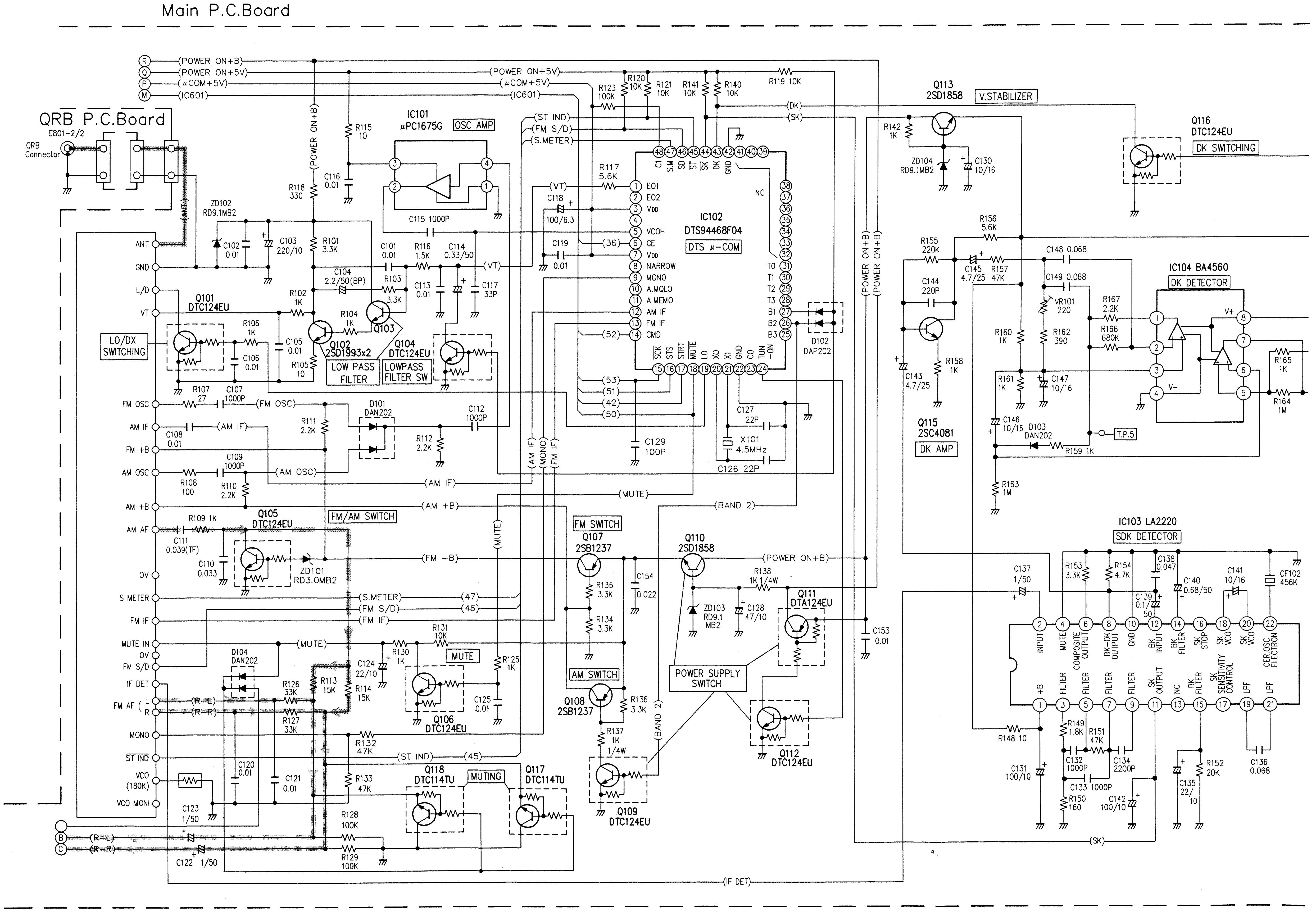
1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd. Music of the test CD(YEDS-18).

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

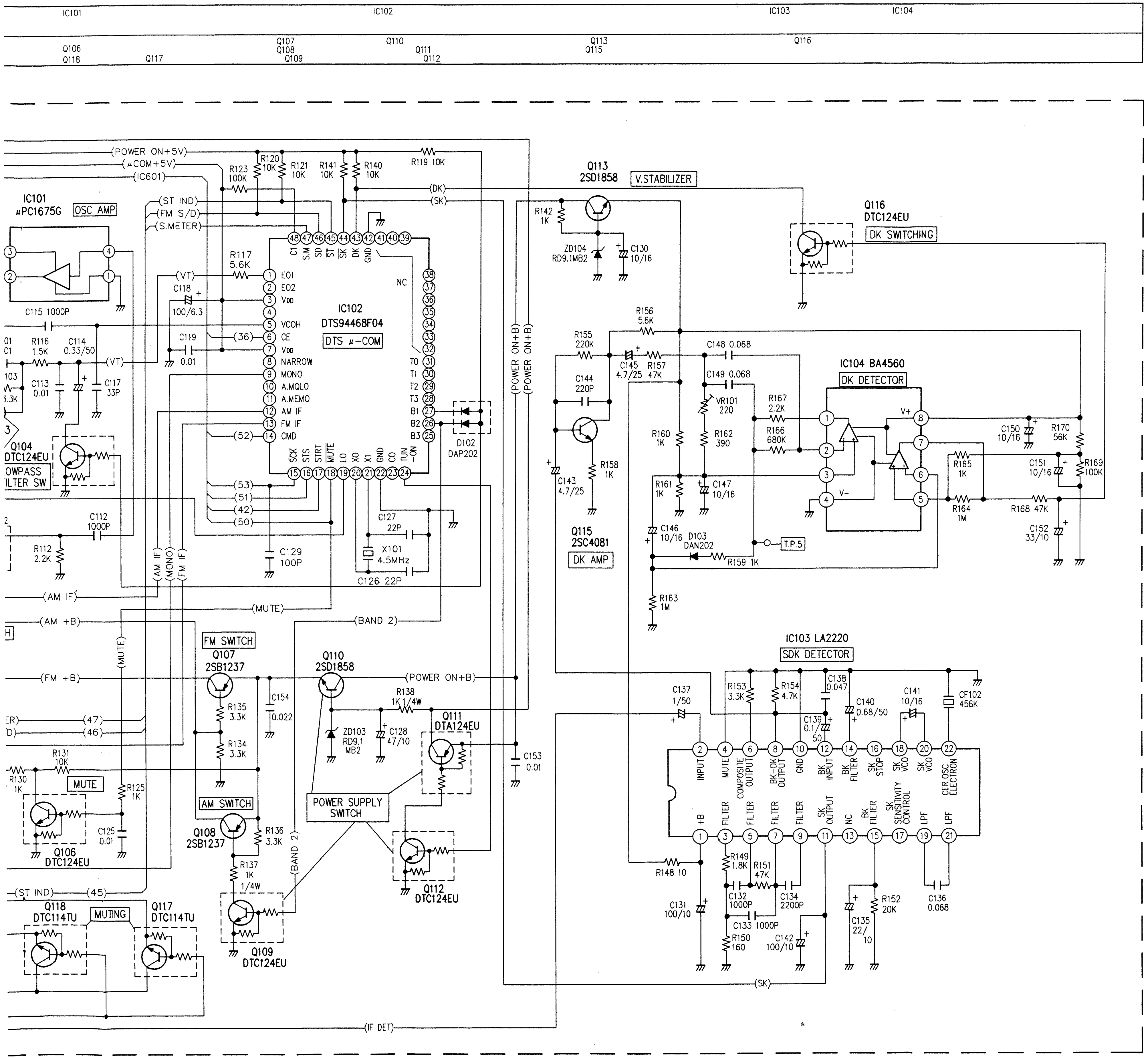
Schematic Diagram (3/3)

IC	IC101	IC102	IC103	IC104
Transistor (Q)	Q101 Q105 Q102 Q103 Q106 Q118 Q117	Q107 Q108 Q109 Q110 Q111 Q112	Q113 Q115	Q116



Main P.C.Board
QRB P.C.Board
E801-2/2
QRB Connector
(POWER ON+B)
(POWER ON+5V)
(μCOM+5V)
(IC601)
IC101 μPC1675G
OSC AMP
IC102 DTS94468F04
DTS μ-COM
IC103 LA2220
SDK DETECTOR
IC104 BA4560
DK DETECTOR
Q101 DTC124EU
LO/DX SWITCHING
Q102 2SD1993x2
Q103
LOW PASS FILTER
Q104 DTC124EU
LOWPASS FILTER SW
Q105 DTC124EU
FM/AM SWITCH
Q106 DTC124EU
MUTE
Q107 2SB1237
FM SWITCH
Q108 2SB1237
AM SWITCH
Q109 DTC124EU
Q110 2SD1858
Q111 DTA124EU
Q112 DTC124EU
POWER SUPPLY SWITCH
Q113 2SD1858
V.STABILIZER
Q115 2SC4081
DK AMP
Q116 DTC124EU
DK SWITCHING
Q117 DTC114TU
Q118 DTC114TU
MUTING
D101 DAN202
D102 DAP202
D103 DAN202
D104 DAN202
ZD101 RD3.0MB2
ZD102 RD9.1MB2
ZD103 RD9.1 MB2
ZD104 RD9.1MB2
X101 4.5MHz
CF102 456K
VR101 220
T.P.5
ANT
GND
L/D
VT
FM OSC
AM IF
FM +B
AM OSC
AM +B
AM AF
0V
S METER
FM IF
MUTE IN
FM S/D
IF DET
FM AF L R
MONO
ST IND
VCO (180K)
VCO MONI
(ST IND)
(FM S/D)
(S.METER)
(VT)
(DK)
(SK)
(MUTE)
(BAND 2)
(AM IF)
(FM IF)
(FM +B)
(AM +B)
(AM OSC)
(FM OSC)
(R-L)
(R-R)
(IF DET)
EO1
EO2
VDD
VCOH
CE
NARROW
MONO
A.MQLO
A.MEMO
AM IF
FM IF
CMD
TO
T1
T2
T3
B1
B2
B3
NC
INPUT
MUTE
COMPOSITE OUTPUT
BK-DK OUTPUT
BK INPUT
BK FILTER
SK STOP
SK VCO
CER.OSC ELECTRON
SK OUTPUT
SK SENSITIVITY CONTROL
LPF

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$


IC101
IC102
IC103
IC104
Q106
Q118
Q117
Q107
Q108
Q109
Q110
Q111
Q112
Q113
Q115
Q116
(POWER ON+5V)
(µCOM+5V)
(IC601)
IC101
µPC1675G
OSC AMP
(ST IND)
(FM S/D)
(S.METER)
R123 100K
R120 10K
R121 10K
R141 10K
R140 10K
R119 10K
(DK)
(SK)
R117 5.6K
(VT)
C118 100/6.3
C115 1000P
R116 1.5K
C114 0.33/50
C113 0.01
C117 33P
C119 0.01
IC102
DTS94468F04
DTS µ-COM
EO1
EO2
VDD
VCOH
CE
NARROW
MONO
A.MQLO
A.MEMO
AM IF
FM IF
CMD
NC
T0
T1
T2
T3
B1
B2
B3
D102
DAP202
SCK
STS
STRT
MUTE
LO
XO
XI
GND
CO
TUN-ON
(36)
(52)
(53)
(51)
(42)
(50)
C127 22P
X101 4.5MHz
C126 22P
C129 100P
Q104
DTC124EU
LOWPASS FILTER SW
C112 1000P
R112 2.2K
(AM IF)
(MONO)
(FM IF)
(MUTE)
(AM IF)
(AM +B)
(BAND 2)
(FM +B)
(47)
(46)
R131 10K
R130 1K
MUTE
R125 1K
C125 0.01
Q106
DTC124EU
FM SWITCH
Q107
2SB1237
R135 3.3K
R134 3.3K
C154 0.022
AM SWITCH
Q108
2SB1237
R136 3.3K
R137 1K 1/4W
(BAND 2)
Q109
DTC124EU
Q110
2SD1858
(POWER ON+B)
R138 1K 1/4W
ZD103 RD9.1 MB2
C128 47/10
Q111
DTA124EU
C153 0.01
POWER SUPPLY SWITCH
Q112
DTC124EU
(ST IND)
(45)
Q118
DTC114TU
MUTING
Q117
DTC114TU
(POWER ON+B)
(POWER ON+B)
Q113
2SD1858
V.STABILIZER
R142 1K
ZD104 RD9.1MB2
C130 10/16
Q116
DTC124EU
DK SWITCHING
R156 5.6K
R155 220K
C145 4.7/25
R157 47K
C148 0.068
C149 0.068
C144 220P
VR101 220
R162 390
R167 2.2K
R166 680K
IC104 BA4560
DK DETECTOR
V+
V-
C150 10/16
R170 56K
R169 100K
C151 10/16
R165 1K
R164 1M
R168 47K
C152 33/10
C143 4.7/25
R158 1K
R160 1K
R161 1K
C147 10/16
C146 10/16
D103 DAN202
R159 1K
T.P.5
Q115
2SC4081
DK AMP
R163 1M
IC103 LA2220
SDK DETECTOR
C137 1/50
R153 3.3K
R154 4.7K
C138 0.047
C139 0.1/50
C140 0.68/50
C141 10/16
CF102 456K
INPUT
MUTE
COMPOSITE OUTPUT
BK-DK OUTPUT
GND
BK INPUT
BK FILTER
SK STOP
SK VCO
SK VCO
CER.OSC ELECTRON
+B
FILTER
FILTER
FILTER
FILTER
SK OUTPUT
NC
BK FILTER
SK SENSITIVITY CONTROL
LPF
LPF
R148 10
R149 1.8K
R151 47K
C131 100/10
C132 1000P
C134 2200P
C133 1000P
R150 160
C142 100/10
C135 22/10
R152 20K
C136 0.068
(SK)
(IF DET)

IC101

1	0V
2	3.7V
3	1.5V
4	1V

	E	C	B
Q101	0V	6.6V/0V	4.7V/0V
Q102	0.1V	1.1V~7.4V	0.7V
Q103	0.7V	9.4V	1.1V
Q104	0V	0V	0.8V
Q105	0V	0V	6.7V/0V
Q106	0V	0V/7.7V	0V/4.7V
Q107	8.8V	8.7V/0V	8.8V/8.1V
Q108	8.8V	8.8V/1.4V	8.6V/8.1V
Q109	0V	8.6V/0V	4.4V/1V
Q110	8.8V	14V	9.4V
Q111	0V/13V	13.9V/0V	0V/14V
Q112	0V	0V/13V	5.1V/0V
Q113	8.6V	13.7V	9.2V
Q115	1V	2.9V	1.6V
Q116	0V	3.3V	0.6V
Q117	4.1V	4.1V	4.9V
Q118	4.1V	4.1V	4.9V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	
20	PS	44	
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

(Measuring Conditions)

1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd. Music of the test CD(YEDS-18).

▨ ANT Signal Line
▨ ▨ AM Signal Line
▨ ▨ L-ch Signal Line
▨ R-ch Signal Line

Electrical Parts List

Resistor : Carbon resistors under 1／4 watts are not mentioned in the parts list, please confirm them by schematic diagram.
uF = microfarads, pF = picofarads

Abbreviations

RES. = Resistor
C.F. = Carbon Film
M.F. = Metal Film
M.O. = Metal Oxide Film
M.P. = Metal Plate
TR. = Transistor
TRANS. = Transformer
CP. = Chip
CAP. = Capacitor
ELY. = Electrolytic
CER. = Ceramic
MYL. = Mylar
TAN. = Tantalum
POLY. = Polystyrol
PP. = Polypropylene
PLT. = Polyethylene

Symbol No.	Part No.	Description		
Main P. C. Board				
IC's				
IC101	51T96030F01	μ PC1675G		
IC102	51T94468F04	94468F04		
IC103	51T69141F01	LA2220		
IC104	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC201	51T15260W01	TC9200BF		
IC202	51T15261W01	TC9201BF		
IC203	51T84723F02	LC3516AML		
or	51T15420W01	TC5517FL		
or	51T90640F01	CXK5816M		
IC204	51T15266W02	LC7881MC		
IC205	51T15265W03	SM5807ES		
IC206	51T92693F01	BA10358F		
IC207	51T15262W01	TA8101F		
IC208	51T93333F01	NJM2904M		
IC209	51T93333F01	NJM2904M		
IC210	51T15264W01	TCA0372M		
IC211	51T15264W01	TCA0372M		
IC213	51T93532F01	TC4S69F		
IC214	51T16025W01	NJM2100M		
IC401	51T68999F03	BU4066BF		
IC402	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC403	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC404	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC406	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC407	51T15270W01	BU4052BF		
IC408	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC409	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC410	51T93532F01	TC4S69F		
IC601	51T15778W01	15778W01		
or	51T15263W01	15263W01		
IC602	51T15268W03	L78LR05FA		
IC603	51T90890F01	M5236ML		
IC604	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC605	51T15510W01	MC34063M		
IC606	51T92166F01	S-8052ALR		
IC607	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
Transistors				
Q101	48T94606F03	CP., DTC124EU		
Q102	48T90181F05	2SD1993		
Q103	48T90181F05	2SD1993		
Q104	48T94606F03	CP., DTC124EU		
Q105	48T94606F03	CP., DTC124EU		
Q106	48T94606F03	CP., DTC124EU		
Q107	48T83417F03	2SB1237		
Q108	48T83417F03	2SB1237		
Q109	48T94606F03	CP., DTC124EU		
Q110	48T83415F03	2SD1858		
Q111	48T94606F53	CP., DTA124EU		
Q112	48T94606F03	CP., DTC124EU		
Q113	48T83415F03	2SD1858		
Q115	48T94582F01	CP., 2SC4081		
Q116	48T94606F03	CP., DTC124EU		
Q117	48T94606F05	CP., DTC114TU		
Q118	48T94606F05	CP., DTC114TU		
Q201	48T83417F03	2SB1237		
Q202	48T94606F53	CP., DTA124EU		
Q203	48T94606F01	CP., DTC144EU		
Q204	48T15287W03	2SB1326Q		
Q205	48T94606F03	CP., DTC124EU		
Q206	48T81552F01	CP., 2SD1383K		
Q207	48T80614F01	CP., 2SD1664		
Q208	48T94582F01	CP., 2SC4081		
Q209	48T80611F01	CP., 2SB1132		
Q210	48T94606F03	CP., DTC124EU		
Q211	48T94606F53	CP., DTA124EU		
Q401	48T62967F33	CP., DTC343T		
Q402	48T62967F33	CP., DTC343T		
Q403	48T63788F01	CP., 2SD1328		
Q404	48T94606F03	CP., DTC124EU		
Q405	48T63788F01	CP., 2SD1328		
Q406	48T94606F03	CP., DTC124EU		
Q407	48T94606F01	CP., DTC144EU		

Symbol No.	Part No.	Description		
Q408	48T94606F01	CP., DTC144EU		
Q601	48T94606F03	CP., DTC124EU		
Q603	48T94606F03	CP., DTC124EU		
Q604	48T94606F03	CP., DTC124EU		
Q605	48T94606F03	CP., DTC124EU		
Q606	48T94606F53	CP., DTA124EU		
Q607	48T94606F03	CP., DTC124EU		
Q608	48T94606F03	CP., DTC124EU		
Q609	48T94606F55	CP., DTA114TU		
Q610	48T94581F01	CP., 2SA1576		
Q611	48T94606F03	CP., DTC124EU		
Q612	48T94606F03	CP., DTC124EU		
Q613	48T94606F03	CP., DTC124EU		
Q614	48T80611F01	CP., 2SB1132		
Q615	48T80611F01	CP., 2SB1132		
Q616	48T94606F03	CP., DTC124EU		
Q617	48T94606F56	CP., DTA114EU		
Q618	48T94606F03	CP., DTC124EU		
Q619	48T15289W03	2SD2008Q		
Q620	48T94606F53	CP., DTA124EU		
Q621	48T94606F03	CP., DTC124EU		
Q623	48T94606F03	CP., DTC124EU		
Q625	48T15701W02	2SB1360E		
Q626	48T83417F03	2SB1237		
Q627	48T63420F01	CP., 2SA1037K		
Q628	48T94606F53	CP., DTA124EU		
Q629	48T94606F03	CP., DTC124EU		
Q630	48T94606F03	CP., DTC124EU		
Q631	48T94582F01	CP., 2SC4081		
Q632	48T94606F53	CP., DTA124EU		
Q633	48T94606F53	CP., DTA124EU		
Q634	48T94606F03	CP., DTC124EU		
Q635	48T94606F03	CP., DTC124EU		
Q636	48T94606F53	CP., DTA124EU		
Q637	48T15511W02	CP., 2SB1261		
Q638	48T94606F56	CP., DTA114EU		
Q639	48T94606F03	CP., DTC124EU		
Q641	48T63419F01	CP., 2SA1036K		
Q642	48T94606F03	CP., DTC124EU		
Q645	48T94582F01	CP., 2SC4081		
Q922	48T15289W03	2SD2008Q		
Diodes				
D101	48T94608F03	CP., DAN202U		
D102	48T94608F02	CP., DAP202U		
D103	48T94608F03	CP., DAN202U		
D104	48T94608F03	CP., DAN202U		
D201	48T94608F03	CP., DAN202U		
D202	48T94608F03	CP., DAN202U		
D203	48T94608F03	CP., DAN202U		
D204	48T15512W01	CP., DSM10		
D205	48T94608F03	CP., DAN202U		
D206	48T94608F03	CP., DAN202U		
D601	48T94608F03	CP., DAN202U		
D602	48T15290W01	DAN213		
D604	48T94608F01	CP., DA204U		
D605	48C40235G02	10E2		
D606	48T94608F03	CP., DAN202U		
D607	48T94608F02	CP., DAP202U		
D608	48T94608F03	CP., DAN202U		
D611	48T94608F03	CP., DAN202U		
D612	48T94608F03	CP., DAN202U		
D613	48T15702W01	CP., SB05		
D614	48T94608F03	CP., DAN202U		
D615	48T94608F01	CP., DA204U		
D616	48T94608F03	CP., DAN202U		
D617	48T94608F03	CP., DAN202U		
D618	48T94608F03	CP., DAN202U		
D619	48T94608F03	CP., DAN202U		
D620	48T94608F03	CP., DAN202U		
D622	48C40235G02	10E2		
D624	48T15512W01	CP., DSM10		
D625	48T15512W01	CP., DSM10		
D626	48T94608F01	CP., DA204U		
D627	48T44813F02	MA165		
ZD101	48T62934F05	Zener, CP., RD3.0MB2		
ZD102	48T62934F37	Zener, CP., RD9.1MB2		
ZD103	48T62934F37	Zener, CP., RD9.1MB2		
ZD104	48T62934F37	Zener, CP., RD9.1MB2		
ZD201	48T62934F01	Zener, CP., RD2.4MB1		
ZD601	48T62934F30	Zener, CP., RD7.5MB1		
ZD602	48T62934F19	Zener, CP., RD5.1MB2		
ZD603	48T62934F29	Zener, CP., RD6.8MB3		
ZD604	48T62934F33	Zener, CP., RD8.2MB1		
ZD605	48T62934F22	Zener, CP., 5.6MB2		
ZD606	48T62934F40	Zener, CP., RD10MB2		
ZD607	48T62934F22	Zener, CP., 5.6MB2		
ZD608	48T62934F49	Zener, CP., RD13MB2		

Symbol No.	Part No.	Description		
Thermistor／Coils／Crystals／Filter				
TH201	48T93439F06	Thermistor, 100k ohm		
L601	25C40894G01	Coil, Choke, 1.2mH		
L602	24T71179F05	Coil, Inductor, 220 μ H		
L603	24T16271W13	Coil, 220 μ H		
X101	48T82502F02	Crystal 4.5MHz		
X201	48T84727F03	Crystal 16.9344MHz		
X601	91T15285W01	CER., LOCK 4.19MHz		
CF102	91T69142F01	CER., Filter, 456－13		
Capacitors				
C101	08S65128F69	CP., 0.01 μ F		
C102	08S65128F69	CP., 0.01 μ F		
C103	23T16086W01	ELY., 220 μ F／10V		
C104	23T82372F19	ELY., (BP) 2.2 μ F／50V		
C105	08S65128F69	CP., 0.01 μ F		
C106	08S65128F69	CP., 0.01 μ F		
C107	08S65128F57	CP., 1000pF		
C108	08S65128F69	CP., 0.01 μ F		
C109	08S65128F57	CP., 1000pF		
C110	08T15399W02	CP., 0.033 μ F		
C111	08T90316F24	TF, 0.039 μ F		
C112	08S65128F57	CP., 1000pF		
C113	08S65128F69	CP., 0.01 μ F		
C114	23S61523F27	ELY., 0.33 μ F／50V		
C115	08S65128F57	CP., 1000pF		
C116	08S65128F69	CP., 0.01 μ F		
C117	08S65128F23	CP., 33pF		
C118	23S61523F08	ELY., 100 μ F／6.3V		
C119	08S65128F69	CP., 0.01 μ F		
C120	08S65128F69	CP., 0.01 μ F		
C121	08S65128F69	CP., 0.01 μ F		
C122	23S61523F29	ELY., 1 μ F／50V		
C123	23S61523F29	ELY., 1 μ F／50V		
C124	23S61523F09	ELY., 22 μ F／10V		
C125	08S65128F69	CP., 0.01 μ F		
C126	08S82122F21	CP., 22pF		
C127	08S82122F21	CP., 22pF		
C128	23S61523F11	ELY., 47 μ F／10V		
C129	08S65128F35	CP., 100pF		
C130	23S61523F12	ELY., 10 μ F／16V		
C131	23S61523F34	ELY., 100 μ F／10V		
C132	08S72783F35	CP., 1000pF		
C133	08S72783F35	CP., 1000pF		
C134	08T90316F09	TF, 2200pF		
C135	23S61523F09	ELY., 22 μ F／10V		

Symbol No.	Part No.	Description		
C136	08T90316F27	TF, 0.068 μ F		
C137	23S61523F29	ELY., 1 μ F／50V		
C138	08S65128F74	CP., 0.047 μ F		
C139	23S61523F25	ELY., 0.1 μ F／50V		
C140	23S61523F35	ELY., 0.68 μ F／50V		
C141	23S61523F12	ELY., 10 μ F／16V		
C142	23S61523F34	ELY., 100 μ F／10V		
C143	23S61523F17	ELY., 4.7 μ F／25V		
C144	08S65128F43	CP., 220pF		
C145	23S61523F17	ELY., 4.7 μ F／25V		
C146	23S61523F12	ELY., 10 μ F／16V		
C147	23S61523F12	ELY., 10 μ F／16V		
C148	08T90316F27	TF, 0.068 μ F		
C149	08T90316F27	TF, 0.068 μ F		
C150	23S61523F12	ELY., 10 μ F／16V		
C151	23S61523F12	ELY., 10 μ F／16V		
C152	23S61523F10	ELY., 33 μ F／10V		
C153	08S65128F69	CP., 0.01 μ F		
C154	08S65128F72	CP., 0.022 μ F		
C201	23T74437F29	TAN., 3.3 μ F／16V		
C202	23S61524F08	ELY., 100 μ F／6.3V		
C203	08S65128F72	CP., 0.022 μ F		
C204	23S61524F13	ELY., 10 μ F／16V		
C205	23T74437F32	TAN., 10 μ F／16V		
C206	23T74437F32	TAN., 10 μ F／16V		
C207	08S65128F23	CP., 33pF		
C208	08S65128F23	CP., 33pF		
C209	08S65128F04	CP., 2pF		
C210	08S65128F69	CP., 0.01 μ F		
C211	23T15412W13	ELY., 10 μ F／16V		
C212	08S65128F31	CP., 68pF		
C213	08S65128F31	CP., 68pF		
C214	08S65128F51	CP., 470pF		
C215	23S61524F05	ELY., 22 μ F／6.3V		
C216	08T15399W03	CP., 0.047 μ F		
C217	08T15399W02	CP., 0.033 μ F		
C218	08S65128F27	CP., 47pF		
C219	08S65128F27	CP., 47pF		
C220	08S65128F27	CP., 47pF		
C221	08S65128F69	CP., 0.01 μ F		
C222	08S65128F60	CP., 1800pF		
C223	08S65128F69	CP., 0.01 μ F		
C224	23S61523F12	ELY., 10 μ F／16V		
C225	08S65128F76	CP., 0.1 μ F		
C226	23T74437F32	TAN., 10 μ F／16V		
C227	08S65128F69	CP., 0.01 μ F		
C228	08S65128F21	CP., 27pF		
C229	08S82122F13	CP., 10pF		
C230	08S82122F13	CP., 10pF		
C232	08S65128F69	CP., 0.01 μ F		

Symbol No.	Part No.	Description		
C234	08S65128F19	CP., 22pF		
C235	08T15399W02	CP., 0.033 μ F		
C236	08S65128F65	CP., 4700pF		
C238	08S65128F47	CP., 330pF		
C239	23S61524F31	ELY., 0.47 μ F/50V		
C240	08S65128F67	CP., 6800pF		
C241	08S65128F62	CP., 2700pF		
C242	08S65128F69	CP., 0.01 μ F		
C243	08T15807W05	CP., 0.1 μ F		
C244	23S61523F17	ELY., 4.7 μ F/25V		
C245	23T15412W13	ELY., 10 μ F/16V		
C246	23S61524F13	ELY., 10 μ F/16V		
C247	08S65128F74	CP., 0.047 μ F		
C248	23S61523F12	ELY., 10 μ F/16V		
C249	08S65128F74	CP., 0.047 μ F		
C250	08S65128F76	CP., 0.1 μ F		
C251	08S65128F74	CP., 0.047 μ F		
C252	23S61524F13	ELY., 10 μ F/16V		
C253	23S61524F13	ELY., 10 μ F/16V		
C254	23S61524F13	ELY., 10 μ F/16V		
C255	23S61524F13	ELY., 10 μ F/16V		
C256	23S61524F13	ELY., 10 μ F/16V		
C257	23S61523F29	ELY., 1 μ F/50V		
C258	08S65128F29	CP., 56pF		
C259	08S53332F35	CP., 1000pF		
C401	23S61524F13	ELY., 10 μ F/16V		
C402	23S61524F13	ELY., 10 μ F/16V		
C403	23S61523F12	ELY., 10 μ F/16V		
C404	23S61523F12	ELY., 10 μ F/16V		
C405	23S61523F12	ELY., 10 μ F/16V		
C406	23S61524F13	ELY., 10 μ F/16V		
C409	08S82122F21	CP., 22pF		
C410	08S82122F21	CP., 22pF		
C415	08S82122F37	CP., 100pF		
C416	08S82122F37	CP., 100pF		
C417	08S82122F21	CP., 22pF		
C418	08S82122F21	CP., 22pF		
C419	08T90316F17	TF, 0.01 μ F		
C420	08T90316F17	TF, 0.01 μ F		
C421	08S72783F38	CP., 1800pF		
C422	08S72783F38	CP., 1800pF		
C423	08S82122F34	CP., 75pF		
C424	08S82122F34	CP., 75pF		
C425	08S72783F37	CP., 1500pF		
C426	08S72783F37	CP., 1500pF		
C427	08T90316F21	TF, 0.022 μ F		
C428	08T90316F21	TF, 0.022 μ F		
C429	23S61523F12	ELY., 10 μ F/16V		
C430	23S61523F12	ELY., 10 μ F/16V		
C431	23S61523F12	ELY., 10 μ F/16V		

Symbol No.	Part No.	Description		
C432	23S61523F12	ELY., 10 μ F/16V		
C433	23S61523F12	ELY., 10 μ F/16V		
C434	08S65128F43	CP., 220pF		
C435	08S65128F43	CP., 220pF		
C601	23S61524F13	ELY., 10 μ F/16V		
C602	23S82482F02	ELY., 100 μ F/16V		
C604	23S61524F29	ELY., 0.22 μ F/50V		
C605	23S61523F12	ELY., 10 μ F/16V		
C606	23S61523F26	ELY., 0.22 μ F/50V		
C607	08S53332F57	CP., 0.1 μ F		
C609	23T16086W02	ELY., 330 μ F/6.3V		
C610	23S61524F13	ELY., 10 μ F/16V		
C612	23S61524F13	ELY., 10 μ F/16V		
C613	23S40657F63	ELY., 1000 μ F/16V		
C614	08S65128F76	CP., 0.1 μ F		
C615	23S82482F02	ELY., 100 μ F/16V		
C617	23S61523F12	ELY., 10 μ F/16V		
C618	23S61524F13	ELY., 10 μ F/16V		
C619	23S61524F33	ELY., 2.2 μ F/50V		
C620	23T15412W13	ELY., 10 μ F/16V		
C621	08S53332F57	CP., 0.1 μ F		
C622	23S61523F12	ELY., 10 μ F/16V		
C625	08S65128F69	CP., 0.01 μ F		
C628	08S65128F37	CP., 120pF		
C629	23T16314W01	ELY., 470 μ F/10V		
C630	23T15412W13	ELY., 10 μ F/16V		
C631	08S65128F76	CP., 0.1 μ F		
C632	08S65128F76	CP., 0.1 μ F		
C633	23T15412W13	ELY., 10 μ F/16V		
C634	23S61524F16	ELY., 47 μ F/16V		
C635	23S61523F29	ELY., 1 μ F/50V		
C636	23S61524F13	ELY., 10 μ F/16V		
C637	23S61523F29	ELY., 1 μ F/50V		
C638	08S65128F69	CP., 0.01 μ F		
C639	23S61523F12	ELY., 10 μ F/16V		
C640	08S65128F69	CP., 0.01 μ F		
C641	08T15399W02	CP., 0.033 μ F		

Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)

R101	06S64995F65	3.3k ohm		
R102	06S64995F53	1k ohm		
R103	06S64995F65	3.3k ohm		
R104	06S64995F53	1k ohm		
R105	06S64995F05	10 ohm		
R106	06S64995F53	1k ohm		
R107	06S64995F15	27 ohm		
R108	06S64995F29	100 ohm		
R109	06S64995F53	1k ohm		
R110	06S64995F61	2.2k ohm		

Symbol No.	Part No.	Description		
R111	06S64995F61	2.2k ohm		
R112	06S64995F61	2.2k ohm		
R113	06S64995F81	15k ohm		
R114	06S64995F81	15k ohm		
R115	06S64995F05	10 ohm		
R116	06S64995F57	1.5k ohm		
R117	06S64995F71	5.6k ohm		
R118	06T70072F41	330 ohm 1/4W		
R119	06S64995F77	10k ohm		
R120	06S64995F77	10k ohm		
R121	06S64995F77	10k ohm		
R123	06S64996F02	100k ohm		
R125	06S64995F53	1k ohm		
R126	06S64995F89	33k ohm		
R127	06S64995F89	33k ohm		
R128	06S64996F02	100k ohm		
R129	06S64996F02	100k ohm		
R130	06S64995F53	1k ohm		
R131	06S64995F77	10k ohm		
R132	06S64995F93	47k ohm		
R133	06S64995F93	47k ohm		
R134	06S64995F65	3.3k ohm		
R135	06S64995F65	3.3k ohm		
R136	06S64995F65	3.3k ohm		
R137	06T70072F53	1k ohm 1/4W		
R138	06T70072F53	1k ohm 1/4W		
R140	06S64995F77	10k ohm		
R141	06S64995F77	10k ohm		
R142	06T70072F53	1k ohm 1/4W		
R148	06S64995F05	10 ohm		
R149	06S64995F59	1.8k ohm		
R150	06S64995F34	160 ohm		
R151	06S64995F93	47k ohm		
R152	06S64995F84	20k ohm		
R153	06S64995F65	3.3k ohm		
R154	06S64995F69	4.7k ohm		
R155	06S64996F10	220k ohm		
R156	06S64995F71	5.6k ohm		
R157	06S64995F93	47k ohm		
R158	06S64995F53	1k ohm		
R159	06S64995F53	1k ohm		
R160	06S64995F53	1k ohm		
R161	06S64995F53	1k ohm		
R162	06S64995F43	390 ohm		
R163	06S64996F26	1M ohm		
R164	06S64996F26	1M ohm		
R165	06S64995F53	1k ohm		
R166	06S64996F22	680k ohm		
R167	06S64995F61	2.2k ohm		
R168	06S64995F93	47k ohm		

Symbol No.	Part No.	Description		
R169	06S64996F02	100k ohm		
R170	06S64995F95	56k ohm		
R201	06T70072F05	10 ohm 1/4W		
R202	06S64995F53	1k ohm		
R203	06S64996F26	1M ohm		
R204	06S64995F83	18k ohm		
R205	06S64995F77	10k ohm		
R206	06S64995F55	1.2k ohm		
R207	06S64995F76	9.1k ohm		
R208	06S64995F93	47k ohm		
R209	06S64995F41	330 ohm		
R210	06S64996F16	390k ohm		
R211	06S64996F14	330k ohm		
R212	06S64995F99	82k ohm		
R213	06S64995F87	27k ohm		
R214	06S64995F53	1k ohm		
R215	06S64995F99	82k ohm		
R216	06S64995F99	82k ohm		
R217	06S64995F73	6.8k ohm		
R218	06S64996F11	240k ohm		
R219	06S64995F87	27k ohm		
R220	06S64995F74	7.5k ohm		
R221	06S64995F83	18k ohm		
R222	06S64995F79	12k ohm		
R223	06S64995F53	1k ohm		
R224	06S64995F85	22k ohm		
R225	06S64995F79	12k ohm		
R226	06S64995F73	6.8k ohm		
R227	06S64995F75	8.2k ohm		
R228	06S64995F75	8.2k ohm		
R229	06S64995F77	10k ohm		
R230	06S64995F85	22k ohm		
R231	06S64996F26	1M ohm		
R232	06S64995F91	39k ohm		
R233	06S64995F74	7.5k ohm		
R234	06S64995F75	8.2k ohm		
R235	06S64995F67	3.9k ohm		
R236	06S64995F61	2.2k ohm		
R237	06S64995F77	10k ohm		
R239	06S64995F73	6.8k ohm		
R240	06S64995F57	1.5k ohm		
R241	06S64996F02	100k ohm		
R242	06S64996F10	220k ohm		
R243	06S64995F85	22k ohm		
R244	06S64995F77	10k ohm		
R245	06S64996F26	1M ohm		
R246	06S64995F97	68k ohm		
R248	06S64995F97	68k ohm		
R249	06S64995F93	47k ohm		
R251	06S64995F75	8.2k ohm		

Symbol No.	Part No.	Description		
R252	06S64995F89	33k ohm		
R254	06S64995F61	2.2k ohm		
R255	06S64995F83	18k ohm		
R256	06S64996F02	100k ohm		
R257	06S64995F73	6.8k ohm		
R258	06S64995F86	24k ohm		
R259	06S64996F14	330k ohm		
R260	06S64996F02	100k ohm		
R261	06S64996F10	220k ohm		
R262	06S64995F85	22k ohm		
R263	06S64995F91	39k ohm		
R264	06S64995F93	47k ohm		
R265	06S64995F77	10k ohm		
R266	06S64995F85	22k ohm		
R267	06S64995F85	22k ohm		
R268	06S64995F85	22k ohm		
R269	06S64995F85	22k ohm		
R270	06S64995F85	22k ohm		
R271	06S64995F77	10k ohm		
R272	06S64995F77	10k ohm		
R273	06S64995F05	10 ohm		
R274	06S64995F77	10k ohm		
R275	06T70072F53	1k ohm 1/4W		
R276	06S64995F77	10k ohm		
R277	06S64996F18	470k ohm		
R278	06S64995F05	10 ohm		
R279	06S64995F85	22k ohm		
R280	06S64995F85	22k ohm		
R282	06S64995F85	22k ohm		
R283	06S64995F85	22k ohm		
R284	06S64995F13	22 ohm		
R285	06S64995F77	10k ohm		
R286	06S64995F53	1k ohm		
R287	06S64995F77	10k ohm		
R288	06S64995F69	4.7k ohm		
R289	06S64995F69	4.7k ohm		
R290	06S64995F69	4.7k ohm		
R291	06S64996F32	3.3M ohm		
R292	06S64996F26	1M ohm		
R293	06S64995F77	10k ohm		
R294	06S64996F20	560k ohm		
R295	06S64995F53	1k ohm		
R296	06S64996F18	470k ohm		
R297	06S64996F02	100k ohm		
R401	06S64995F53	1k ohm		
R402	06S64995F53	1k ohm		
R403	06S64995F53	1k ohm		
R404	06S64995F53	1k ohm		
R405	06S64995F37	220 ohm		
R406	06S64995F37	220 ohm		

Symbol No.	Part No.	Description		
R407	06S64995F77	10k ohm		
R408	06S64995F77	10k ohm		
R409	06S64995F77	10k ohm		
R410	06S64995F77	10k ohm		
R411	06S64995F77	10k ohm		
R412	06S64995F77	10k ohm		
R413	06S64995F77	10k ohm		
R414	06S64995F77	10k ohm		
R415	06S64995F87	27k ohm		
R416	06S64995F87	27k ohm		
R417	06S64995F77	10k ohm		
R418	06S64995F77	10k ohm		
R419	06S64995F77	10k ohm		
R420	06S64995F77	10k ohm		
R421	06S64995F77	10k ohm		
R422	06S64995F77	10k ohm		
R423	06T70072F61	2.2k ohm 1/4W		
R424	06S64995F85	22k ohm		
R425	06T70072F61	2.2k ohm 1/4W		
R426	06S64995F61	2.2k ohm		
R427	06S64995F83	18k ohm		
R428	06S64995F83	18k ohm		
R429	06S64995F77	10k ohm		
R430	06S64995F77	10k ohm		
R431	06S64995F77	10k ohm		
R432	06S64995F77	10k ohm		
R433	06S64996F26	1M ohm		
R434	06S64996F26	1M ohm		
R435	06S64995F53	1k ohm		
R436	06S64995F53	1k ohm		
R437	06S64995F53	1k ohm		
R438	06S64995F53	1k ohm		
R439	06S64995F77	10k ohm		
R440	06S64995F77	10k ohm		
R441	06S64996F04	120k ohm		
R442	06S64996F04	120k ohm		
R443	06S64995F90	36k ohm		
R444	06S64995F90	36k ohm		
R445	06S64996F02	100k ohm		
R446	06S64996F02	100k ohm		
R447	06S64995F85	22k ohm		
R448	06S64995F85	22k ohm		
R449	06S64995F85	22k ohm		
R450	06S64995F85	22k ohm		
R451	06S64996F02	100k ohm		
R452	06S64996F02	100k ohm		
R453	06S64995F57	1.5k ohm		
R454	06S64995F57	1.5k ohm		
R455	06S64996F18	470k ohm		
R456	06S64996F18	470k ohm		

Symbol No.	Part No.	Description		
R457	06S64995F66	3.6k ohm		
R458	06S64995F66	3.6k ohm		
R459	06S64995F70	5.1k ohm		
R460	06S64995F70	5.1k ohm		
R461	06S64995F93	47k ohm		
R462	06S64995F93	47k ohm		
R463	06S64995F70	5.1k ohm		
R464	06S64995F70	5.1k ohm		
R465	06S64996F34	4.7M ohm		
R466	06S64996F34	4.7M ohm		
R467	06S64995F73	6.8k ohm		
R468	06S64995F85	22k ohm		
R470	06S64995F85	22k ohm		
R471	06S64995F85	22k ohm		
R472	06S64995F19	39 ohm		
R473	06S64996F02	100k ohm		
R601	06S64995F77	10k ohm		
R602	06T70072F61	2.2k ohm 1/4W		
R604	06T70072F53	1k ohm 1/4W		
R605	06T70072F53	1k ohm 1/4W		
R606	06S64995F05	10 ohm		
R607	06T70072F65	3.3k ohm 1/4W		
R608	06S64995F69	4.7k ohm		
R609	06S64995F85	22k ohm		
R610	06S64995F69	4.7k ohm		
R611	06S64995F85	22k ohm		
R612	06T70072F78	2.2 ohm 1/4W		
R613	06S64995F85	22k ohm		
R614	06S64995F61	2.2k ohm		
R615	06S64995F77	10k ohm		
R616	06S64995F77	10k ohm		
R617	06S64995F77	10k ohm		
R618	06S64995F69	4.7k ohm		
R619	06S64995F53	1k ohm		
R620	06S64995F77	10k ohm		
R621	06T70072F53	1k ohm 1/4W		
R622	06S64995F99	82k ohm		
R624	06S64995F45	470 ohm		
R625	06S64995F77	10k ohm		
R626	06T70072F53	1k ohm 1/4W		
R627	06T70072F37	220 ohm 1/4W		
R628	06S64995F81	15k ohm		
R629	06S64995F70	5.1k ohm		
R630	06S64995F87	27k ohm		
R631	06S64995F78	11k ohm		
R632	06S64995F77	10k ohm		
R633	06T70072F45	470 ohm 1/4W		
R634	06S64995F77	10k ohm		
R635	06S64995F61	2.2k ohm		
R636	06S64996F10	220k ohm		

Symbol No.	Part No.	Description		
R637	06S64995F77	10k ohm		
R638	06S64995F77	10k ohm		
R639	06S64996F02	100k ohm		
R640	06S64996F02	100k ohm		
R641	06S64996F02	100k ohm		
R642	06S64996F02	100k ohm		
R643	06S64996F02	100k ohm		
R646	06S64996F02	100k ohm		
R647	06S64995F93	47k ohm		
R648	06S64995F77	10k ohm		
R649	06S64995F77	10k ohm		
R650	06S64995F77	10k ohm		
R651	06S64995F63	2.7k ohm		
R652	06S64996F02	100k ohm		
R653	06S64996F02	100k ohm		
R654	06S64995F81	15k ohm		
R655	06T70072F29	100 ohm 1/4W		
R656	06T70072F47	560 ohm 1/4W		
R657	06S64996F02	100k ohm		
R658	06S64995F77	10k ohm		
R659	06T70072F53	1k ohm 1/4W		
R660	06S64996F02	100k ohm		
R661	06S64995F77	10k ohm		
R662	06S64995F77	10k ohm		
R663	06S64995F77	10k ohm		
R665	06S64995F85	22k ohm		
R666	06T70072F53	1k ohm 1/4W		
R668	06T70072F47	560 ohm 1/4W		
R669	06S64995F69	4.7k ohm		
R670	06S64995F53	1k ohm		
R671	06S64995F61	2.2k ohm		
R672	06S64995F85	22k ohm		
R673	06S64995F53	1k ohm		
R674	06S64995F45	470 ohm		
R680	06S64995F65	3.3k ohm		
R681	06S64996F03	110k ohm		
R682	06S64996F04	120k ohm		
R683	06S64996F02	100k ohm		
R684	06S64995F91	39k ohm		
R685	06S64995F93	47k ohm		
R686	06S64995F93	47k ohm		
VR101	18T10024W03	Variable, 220 ohm		
VR201	18T15805W19	Variable, 100k ohm		
VR406	18C41732G11	Variable, 220 ohm		
VR401-1				
VR401-2				
VR401-3				
VR401-4	18T15283W01	Volume, Rotary		
VR401-5		(VOLUME/BAL/		
VR401-6		FAD)		
S801		(POWER)		
S905		(SDK)		

Symbol No.	Part No.	Description		
Load/Photo P. C. Board				
IC/Transistors				
IC301	51T15267W01	IC, LB1641		
Q305	48T62967F03	CP., DTC124K		
Q306	48T62966F03	CP., DTA124		
Q307	48T83415F03	2SD1858		
Q308	48T83415F03	2SD1858		
PT301	48T92913F01	PHOTO, PT360		
PT302	48T92913F01	PHOTO, PT360		
PT303	48T92913F01	PHOTO, PT360		
LEDs/Diodes				
LD301	48T16057W02	LED, AN 501−B1 (RED)		
LD302	48T16057W02	LED, AN 501−B1 (RED)		
LD303	48T16057W02	LED, AN 501−B1 (RED)		
ZD301	48T15440W12	Zener, UTZJ6.2C		
ZD302	48T15440W08	Zener, UTZJ5.6B		
ZD303	48T15440W28	Zener, UTZJ11A		
Capacitors				
C301	08S65128F69	CP., 0.01 μ F		
C302	08S65128F69	CP., 0.01 μ F		
C303	23T74437F32	TAN., 10 μ F/16V		
C304	23S57422F09	ELY., 10 μ F/16V		
Resistors (All resistors are chip 1/8W±5% unless otherwise noted.)				
R301	06S53330F47	560 ohm		
R302	06S53330F47	560 ohm		
R303	06S53330F47	560 ohm		
R304	06S53331F02	100k ohm		
R305	06S53331F02	100k ohm		
R306	06S53331F02	100k ohm		
R307	06T70072F45	470 ohm 1/4W		
R309	06C43205J38	Metal Film, 10 ohm 1/2W		
R310	06S53330F47	560 ohm		
R311	06S53331F02	100k ohm		
R312	06T70072F53	1k ohm 1/4W		

Symbol No.	Part No.	Description		
Main-Front P. C. Board				
IC's				
IC405	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC901	51T15269W02	MSC1149GS		
IC902	51T15269W02	MSC1149GS		
Transistors				
Q901	48T63419F01	CP., 2SA1036K		
Q903	48T63461F01	CP., 2SC2411K		
Diodes/LED				
D901	48T94608F01	CP., DA204U		
ZD901	48T62934F27	Zener, CP., RD6.8MB1		
LD902	48T42449F12	LED, BG5535K (GRN)		
Switches				
S901	40T66861F03	Tact, SKHHAQ (RESET)		
S902	40T66861F03	Tact, SKHHAQ (MONO)		
S903	40T66861F03	Tact, SKHHAQ (DX)		
S904	40T66861F03	Tact, SKHHAQ (TU/BAND)		
S906	40T66861F03	Tact, SKHHAQ (UP)		
S907	40T66861F03	Tact, SKHHAQ (4)		
S908	40T66861F03	Tact, SKHHAQ (5)		
S909	40T66861F03	Tact, SKHHAQ (6)		
S910	40T10876W12	Tact, SKHLAJ (SEEK)		
S911	40T66861F03	Tact, SKHHAQ (DOWN)		
S912	40T66861F03	Tact, SKHHAQ (1/MIX)		
S913	40T66861F03	Tact, SKHHAQ (2/REP)		
S914	40T66861F03	Tact, SKHHAQ (3/SCAN)		
S915	40T66861F03	Tact, SKHHAQ (PLAY/PAUSE)		
S916	40T66861F03	Tact, SKHHAQ (EJECT)		

Symbol No.	Part No.	Description		
Lamps				
PL901	65T95274F02	Pilot, 6V−70mA		
PL902	65T95274F02	Pilot, 6V−70mA		
PL903	65T67467F03	Pilot, 6V−32mA		
PL904	65T95274F02	Pilot, 6V−70mA		
Capacitors				
C408	23S61523F12	ELY., 10 μ F/16V		
C411	08T90316F22	TF, 0.027 μ F		
C412	08T90316F22	TF, 0.027 μ F		
C413	08T90316F15	TF, 6800pF		
C414	08T90316F15	TF, 6800pF		
Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)				
R901	06S64995F77	10k ohm		
R902	06S64995F65	3.3k ohm		
R903	06T70072F05	10 ohm 1/4W		
R905	06S64995F70	5.1k ohm		
R906	06S64995F64	3k ohm		
R907	06S64995F60	2k ohm		
R908	06S64995F91	39k ohm		
R909	06S64995F70	5.1k ohm		
R910	06S64995F64	3k ohm		
R911	06S64995F60	2k ohm		
R912	06S64995F88	30k ohm		
R913	06S64995F77	10k ohm		
R914	06S64995F70	5.1k ohm		
R915	06S64995F64	3k ohm		
R916	06S64995F60	2k ohm		
R917	06S64995F45	470 ohm		
R918	06T70072F37	220 ohm 1/4W		
VR404	18T15284W01	Volume, Slide (Treble)		
VR405	18T15284W01	Volume, Slide (Bass)		
Miscellaneous				
BA601	60T91060F01	Battery Litium (CR2032−HE2)		
C436	08S65480F37	Capacitor CER., 100pF		
E801	09T15921W03	QRB, Connector (22P)		
FL901	65T15282W03	FL Display, VFD (6−BT−86N)		

Symbol No.	Part No.	Description		
HD201	88T15309W01	Pick, Up		
LD304	48T16057W02	LED, AN 501		
M301	01V13100W97	Assy., Motor Load		
M302	59T91005F01	Motor, Spindle		
M303	59T52973F03	Motor, Servo		
PT304	48T92913F01	Transistor, Photo PT360		
S301	40T71025F03	Switch, Detector (CAM END)		
S302	40T71025F01	Switch, Detector (LIMIT)		
SD301	01A90816F01	Assy., DP Frame Solenoid		

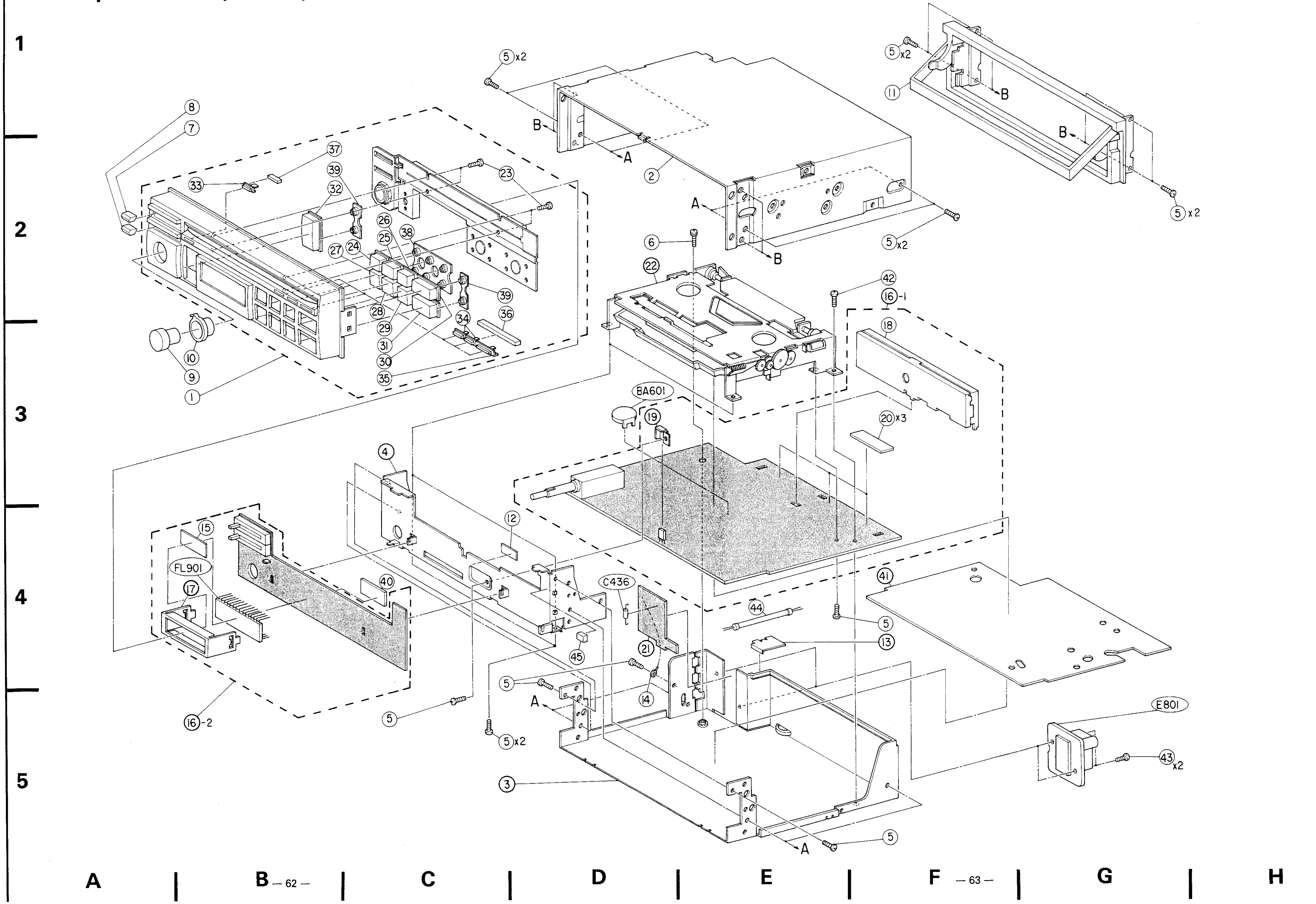
Cabinet Assembly Parts List

Symbol No.	Index	Part No.	Description		
1	3-B	13D10951W04	ASSY., Nosepiece		
2	2-D	15C10943W01	Cover, Top		
5		03S44205G34	Screw, Pan (M2.6 × 5)		
6	2-D	03D40014G18	Screw, W/Washer (M2.6 × 6)		
7	1-B	36B10950W01	Knob, Slide (A)		
8	1-B	36B10950W02	Knob, Slide (B)		
9	3-B	36A94114F01	Knob, Control (Front)		
10	3-B	36A94115F01	Knob, Control (Back)		
11	1-F	07C10065W01	ASSY., Handle Bracket		
12	4-D	14S71058F53	Insulator Cover		
14	5-D	01T13082W01	ASSY., GND Wire		
15	4-B	26A11440W03	Reflector, Sheet		
18	3-F	77B80466F01	AM/FM Unit (MB4E7010) (FE1)		
20	3-F	14S58462F74	Insulator, Cover		
23	2-C	03S68555F07	Screw, Pan (M2 × 4)		
24	2-C	36C94090F25	Knob, 1/Mix		
25	2-C	36C94090F26	Knob, 2/Repeat		
26	2-C	36C94090F27	Knob, 3/Scan		
27	2-B	36C94090F28	Knob, 4		
28	2-C	36C94090F29	Knob, 5		
29	3-C	36C94090F30	Knob, 6		
30	3-C	36B94092F01	Knob, Band/Disc		
31	3-C	36B94092F02	Knob, Disc		
32	2-B	36B10947W01	Knob, UP/DN		
33	2-B	36A10953W01	Knob, Push (A)		
34	2-C	36A10953W02	Knob, Push (B)		
35	3-C	36A10954W01	Knob, Eject		
36	2-C	75S92415F88	Cushion, Knob		
37	2-B	75S92415F85	Cushion, Knob		
38	2-C	75B94097F01	Cushion, Knob		
39	2-C	75B94097F02	Cushion, Knob (B)		
40	4-C	75S12196W16	Cushion, Rubber		
42	2-F	03S44205G29	Screw, Pan (M2.6 × 6)		
43	5-G	03S44205G76	Screw, Pan (M2.6 × 8)		
44	4-E	01T74242F09	ASSY., Shield Wire		
45	4-D	75S72374F26	Cushion, Rubber		

Symbol No.	Index	Part No.	Description		

NOTE : The parts without part numbers are not supplied.

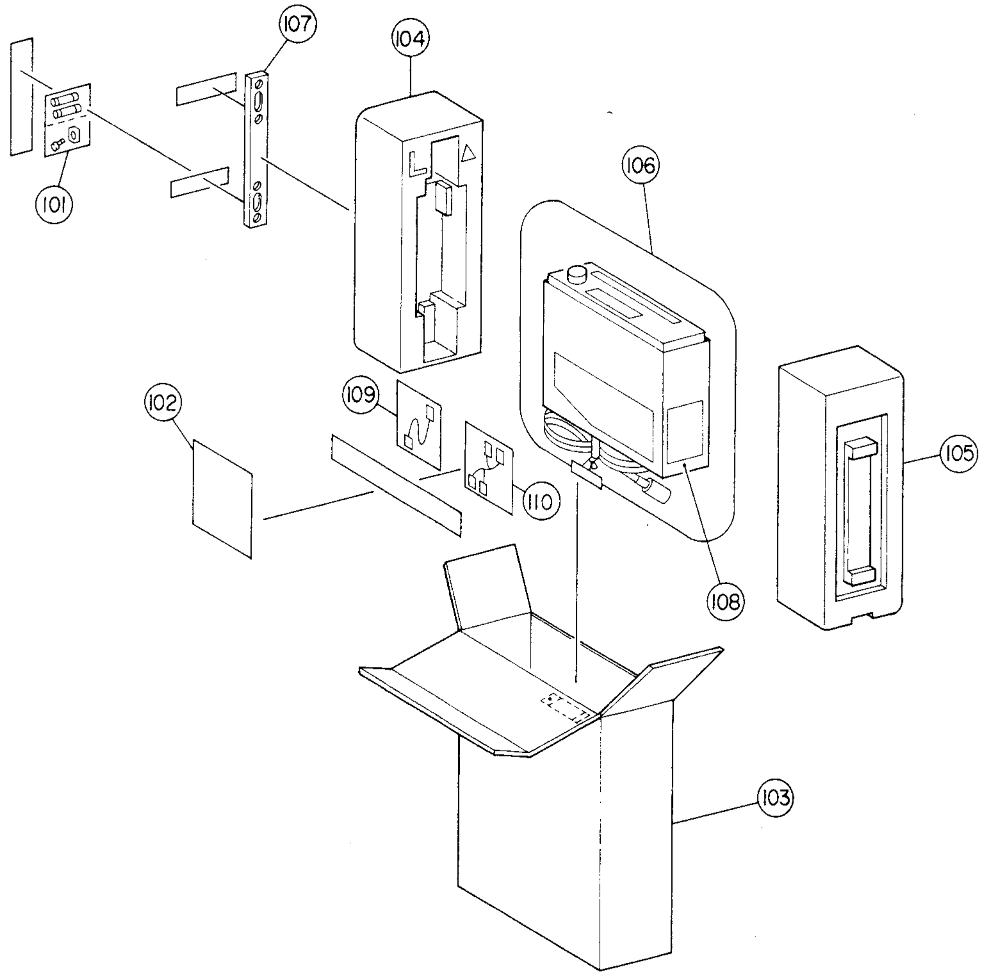
Exploded View (Cabinet)


1
2
3
4
5
A
B
C
D
E
F
G
H
(1)
(2)
(3)
(4)
(5) x2
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)-1
(16)-2
(17)
(18)
(19)
(20) x3
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(35)
(36)
(37)
(38)
(39)
(40)
(41)
(42)
(43) x2
(44)
(45)
BA601
FL901
C436
E801
A
B

Packing Assembly Parts List

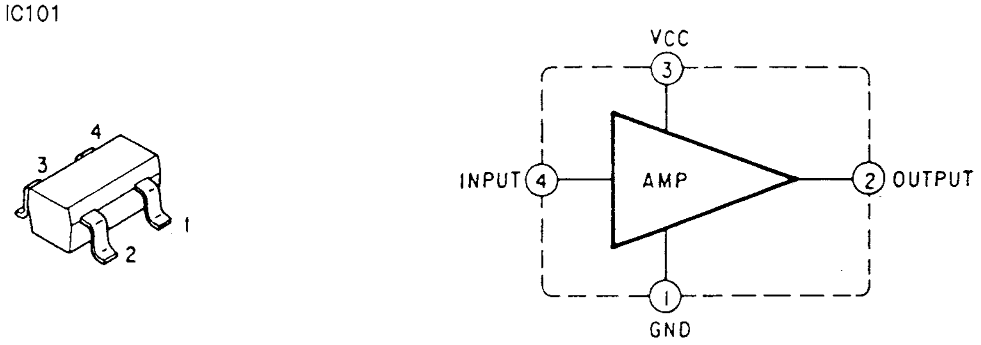
Symbol No.	Part No.	Description		
101	01V11900W92	ASSY., Installation Kit		
101-1	02B47353F01	Nut, Hex (M5)		
101-2	03S40012G66	Screw, Tapping (M5 × 20)		
101-3	03B44963F03	Bolt, Hex W/Washer (M5 × 10)		
101-4	03A40155F05	Bolt, Hex (M5 × 14)		
101-5	03A40155F01	Bolt, Hex (M5 × 8)		
101-6	03A84814F04	Screw, Bind (M2.6 × 18)		
101-7	43A58272F04	Spacer		
101-8	45A41684U01	Arm, Adapter		
102	68P10790W82	Owner's Manual		
103	56S12717W29	Carton, Packing (Individual)		
104	56D13048W01	Tray, Packing (L)		
105	56D13048W02	Tray, Packing (R)		
106	56B40990T36	Sack, Polyethylene		
107	07B64552F01	Bracket, Strap Receiver		
108	01V16200W69	ASSY., Mother Case		
108-1	01T94603F07	ASSY., QRB Connector (PLUG)		
108-2	15D94518F01	Case, Mother		
108-3	03S44205G33	Screw, Pan (M2.6 × 8)		
108-4	03S44205G07	Screw, Pan (M2.6 × 5)		
109	01T96095F01	ASSY., Connector (4P)		
110	01T15832W01	ASSY., RCA 600		

Packing Method View

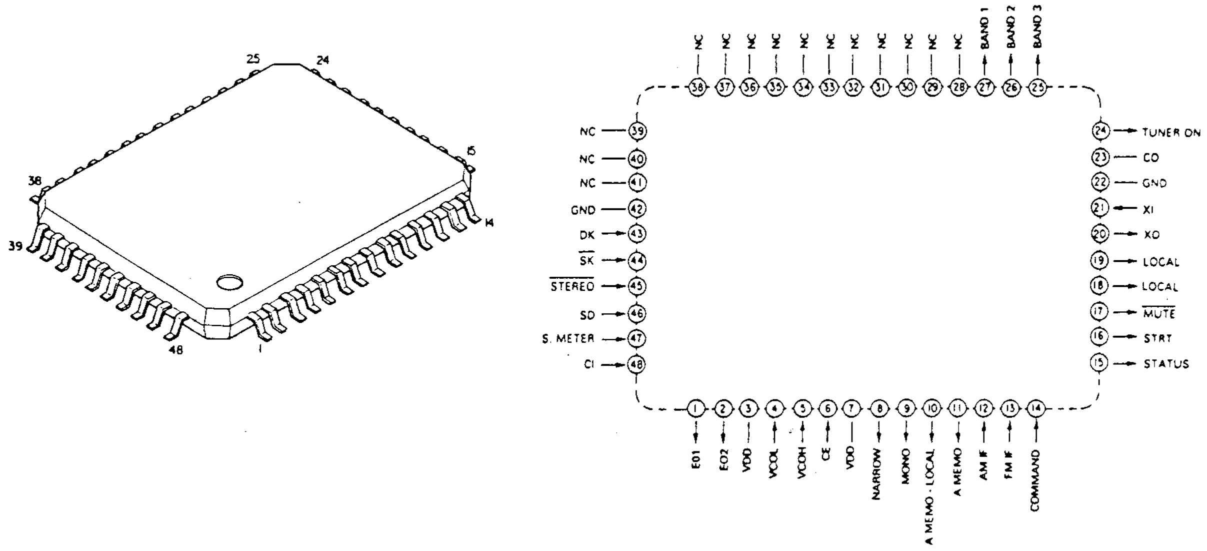

107
104
101
106
102
109
110
105
108
103

Semi-Conductor Lead Identifications

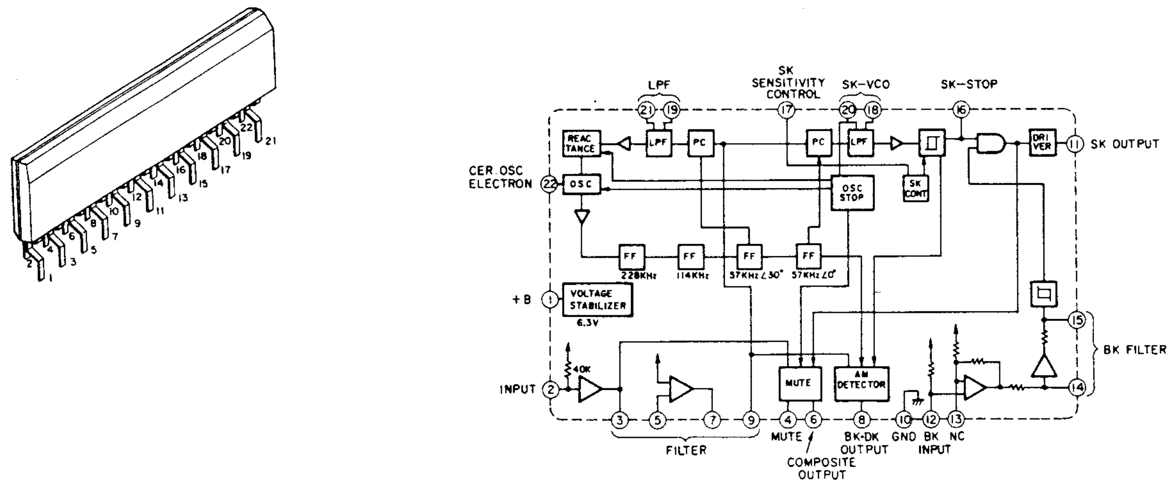
μ PC1675G : IC101


4
3
1
2
VCC
3
INPUT 4
AMP
2 OUTPUT
1
GND

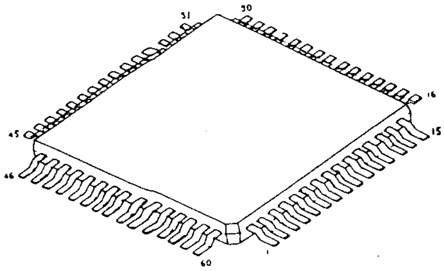
94468F04 : IC102


25
24
15
14
38
39
48
1
NC 38
NC 37
NC 36
NC 35
NC 34
NC 33
NC 32
NC 31
NC 30
NC 29
NC 28
BAND 1 27
BAND 2 26
BAND 3 25
NC 39
NC 40
NC 41
GND 42
DK 43
SK 44
STEREO 45
SD 46
S. METER 47
CI 48
24 TUNER ON
23 CO
22 GND
21 XI
20 XO
19 LOCAL
18 LOCAL
17 MUTE
16 STRT
15 STATUS
1 E01
2 E02
3 VDD
4 VCOL
5 VCOH
6 CE
7 VDD
8 NARROW
9 MONO
10 A MEMO · LOCAL
11 A MEMO
12 AM IF
13 FM IF
14 COMMAND

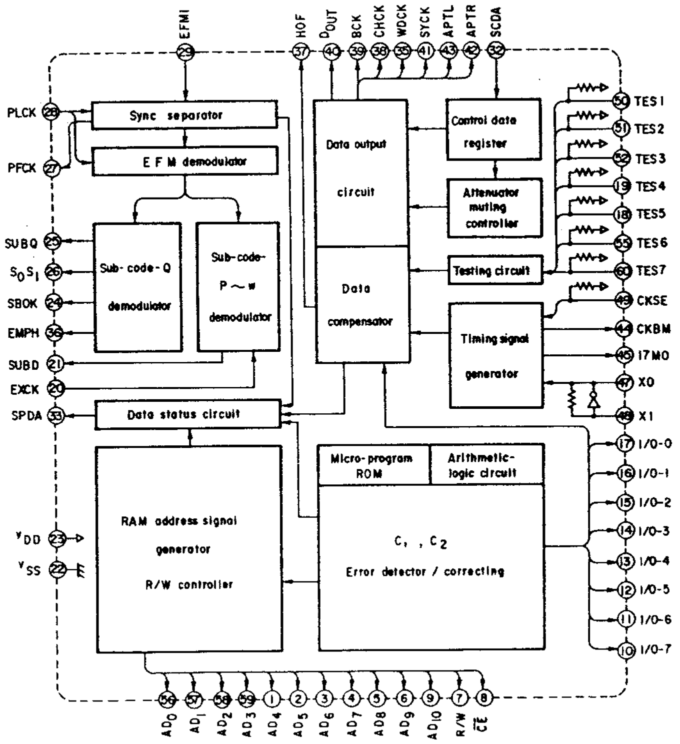
LA2220 : IC103


21
22
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
LPF
21 19
SK SENSITIVITY CONTROL
17
SK-VCO
20 18
SK-STOP
16
REAC TANCE
LPF
PC
PC
LPF
DRI VER
11 SK OUTPUT
CER.OSC ELECTRON 22
OSC
OSC STOP
SK CONT
FF
FF
FF
FF
228KHz
114KHz
57KHz∠30°
57KHz∠0°
+B 1
VOLTAGE STABILIZER
6.3V
40K
INPUT 2
MUTE
AM DETECTOR
15
BK FILTER
14
3
5
7
9
FILTER
4
MUTE
6
COMPOSITE OUTPUT
8
BK-DK OUTPUT
10
GND
12
BK INPUT
13
NC

TC9200BF : IC201

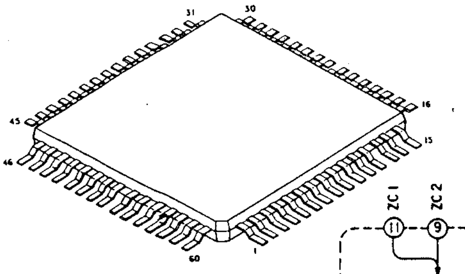


31
30
16
15
45
46
60
1

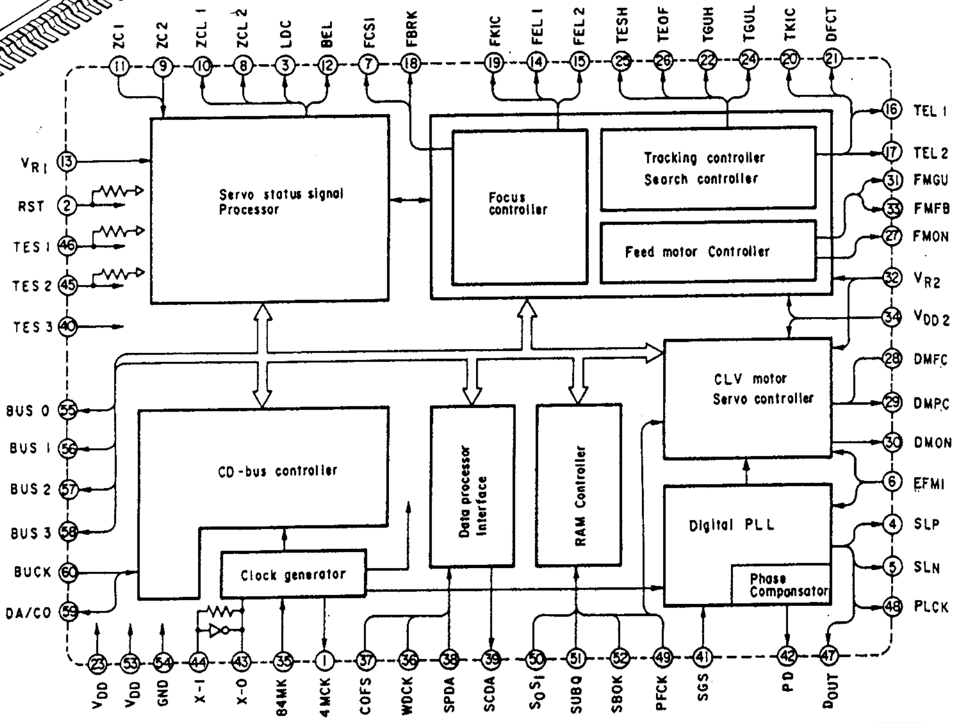


EFMI
HOF
DOUT
BCK
CHCK
WDCK
SYCK
APTL
APTR
SCDA
PLCK
PFCK
SUBQ
S0S1
SBOK
EMPH
SUBD
EXCK
SPDA
VDD
VSS
Sync separator
E F M demodulator
Sub-code-Q demodulator
Sub-code-P～w demodulator
Data status circuit
RAM address signal generator R/W controller
Data output circuit
Data compensator
Control data register
Attenuator muting controller
Testing circuit
Timing signal generator
Micro-program ROM
Arithmetic-logic circuit
C1, C2 Error detector / correcting
TES1
TES2
TES3
TES4
TES5
TES6
TES7
CKSE
CKBM
17MO
XO
X1
I/O-0
I/O-1
I/O-2
I/O-3
I/O-4
I/O-5
I/O-6
I/O-7
AD0
AD1
AD2
AD3
AD4
AD5
AD6
AD7
AD8
AD9
AD10
R/W
CE

TC9201BF : IC202

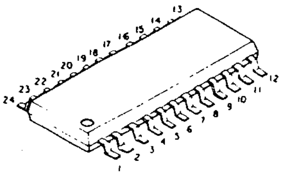


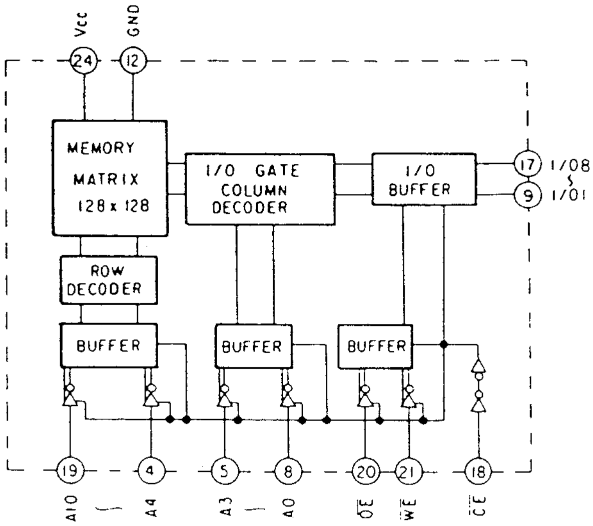
31
30
16
15
45
46
60
1



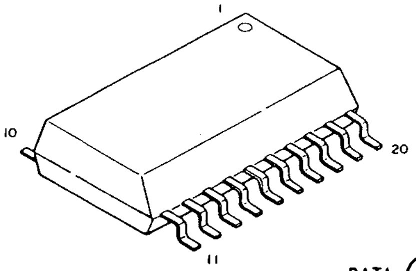
ZC1
ZC2
ZCL1
ZCL2
LDC
BEL
FCSI
FBRK
FKIC
FEL1
FEL2
TESH
TEOF
TGUH
TGUL
TKIC
DFCT
VR1
RST
TES1
TES2
TES3
BUS 0
BUS 1
BUS 2
BUS 3
BUCK
DA/CO
Servo status signal Processor
Focus controller
Tracking controller Search controller
Feed motor Controller
CLV motor Servo controller
CD-bus controller
Clock generator
Data processor Interface
RAM Controller
Digital PLL
Phase Compensator
TEL1
TEL2
FMGU
FMFB
FMON
VR2
VDD2
DMFC
DMPC
DMON
EFMI
SLP
SLN
PLCK
VDD
VDD
GND
X-I
X-O
64MK
4MCK
COFS
WDCK
SPDA
SCDA
S0S1
SUBQ
SBOK
PFCK
SGS
PD
DOUT

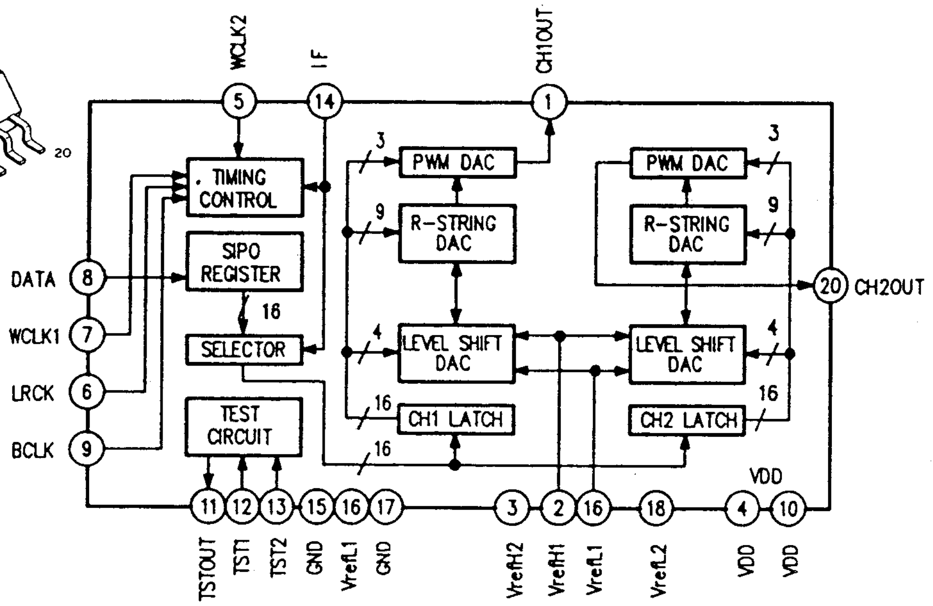
CXK5816M
LC3516AML
TC5517FL
: IC203


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

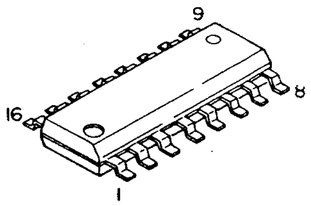

Vcc
GND
24
12
MEMORY MATRIX 128 x 128
I/O GATE COLUMN DECODER
I/O BUFFER
17 I/O8
9 I/O1
ROW DECODER
BUFFER
BUFFER
BUFFER
19
4
5
8
20
21
18
A10
A4
A3
A0
$\overline{OE}$
$\overline{WE}$
$\overline{CE}$

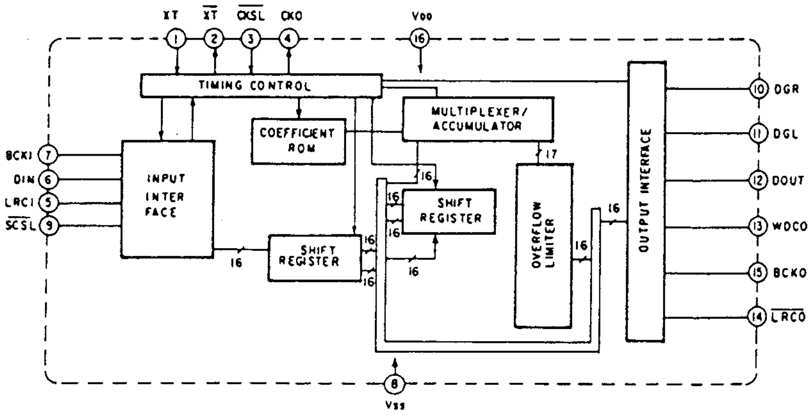
LC7881MC : IC204



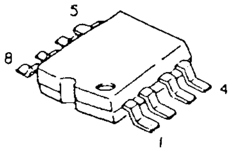

WCLK2
IF
CH1OUT
5
14
1
TIMING CONTROL
SIPO REGISTER
16
SELECTOR
TEST CIRCUIT
DATA 8
WCLK1 7
LRCK 6
BCLK 9
3
PWM DAC
9
R-STRING DAC
4
LEVEL SHIFT DAC
16
CH1 LATCH
16
PWM DAC
3
R-STRING DAC
9
LEVEL SHIFT DAC
4
CH2 LATCH
16
20 CH2OUT
VDD
11
12
13
15
16
17
3
2
16
18
4
10
TSTOUT
TST1
TST2
GND
VrefL1
GND
VrefH2
VrefH1
VrefL1
VrefL2
VDD
VDD

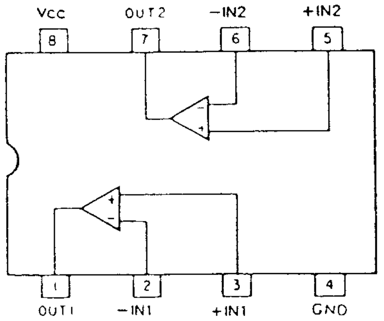
SM5807ES : IC205



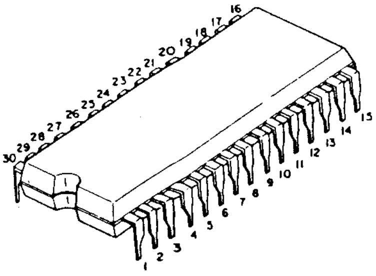

XT
$\overline{XT}$
$\overline{CKSL}$
CKO
VDD
1
2
3
4
16
TIMING CONTROL
COEFFICIENT ROM
MULTIPLEXER/ ACCUMULATOR
BCKI 7
DIN 6
LRCI 5
$\overline{SCSL}$ 9
INPUT INTER FACE
16
SHIFT REGISTER
16
16
16
SHIFT REGISTER
16
16
16
17
OVERFLOW LIMITER
16
16
OUTPUT INTERFACE
10 DGR
11 DGL
12 DOUT
13 WDCO
15 BCKO
14 $\overline{LRCO}$
8
Vss

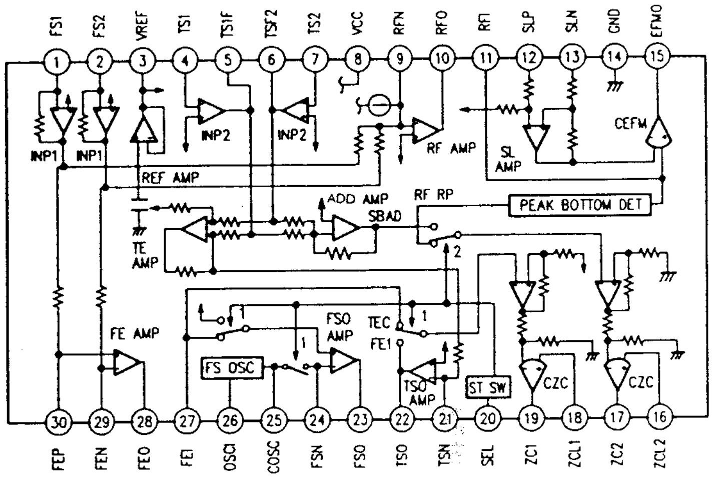
BA10358F : IC206



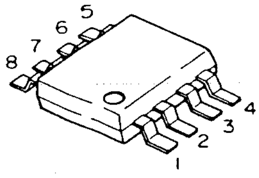

Vcc
OUT2
−IN2
+IN2
8
7
6
5
1
2
3
4
OUT1
−IN1
+IN1
GND

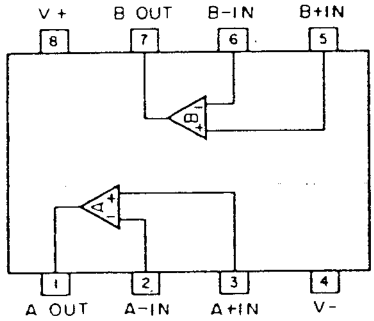
TA8101F : IC207


16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

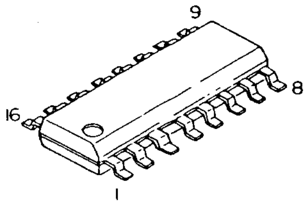

FS1
FS2
VREF
TS1
TS1F
TSF2
TS2
VCC
RFN
RFO
RFI
SLP
SLN
GND
EFMO
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
INP1
INP1
REF AMP
INP2
INP2
RF AMP
SL AMP
CEFM
ADD AMP
SBAD
RF RP
PEAK BOTTOM DET
TE AMP
FE AMP
FS OSC
FSO AMP
TEC
FE1
TSO AMP
ST SW
CZC
CZC
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
FEP
FEN
FEO
FEI
OSCI
COSC
FSN
FSO
TSO
TSN
SEL
ZC1
ZCL1
ZC2
ZCL2

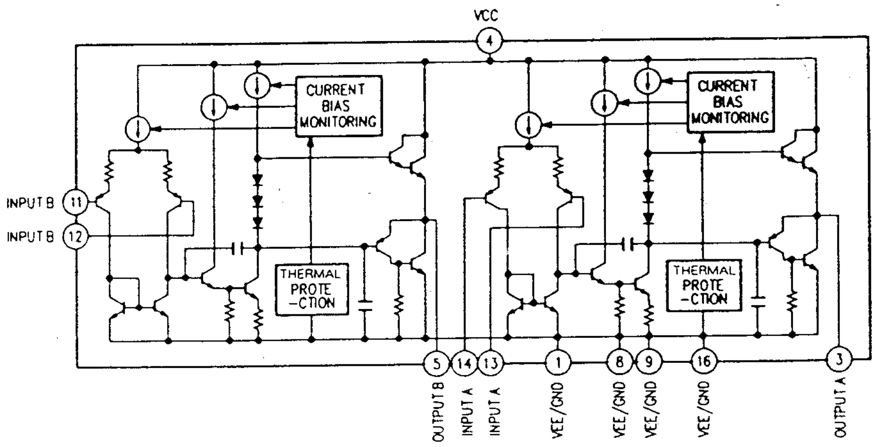
NJM2904M: IC208, 209
NJM2100M: IC214



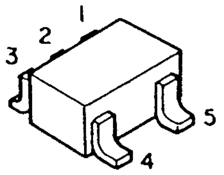

V+
B OUT
B−IN
B+IN
8
7
6
5
B
A
1
2
3
4
A OUT
A−IN
A+IN
V−

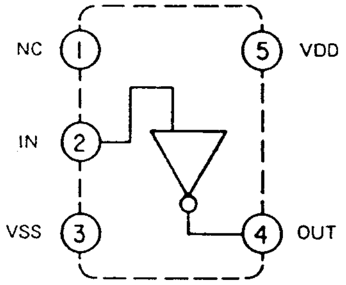
TCA0372M : IC210, 211



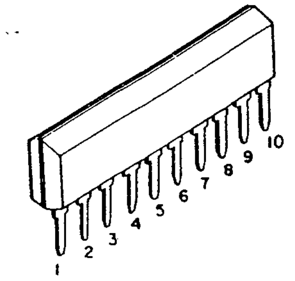

VCC
4
CURRENT BIAS MONITORING
CURRENT BIAS MONITORING
INPUT B 11
INPUT B 12
THERMAL PROTE -CTION
THERMAL PROTE -CTION
5
14
13
1
8
9
16
3
OUTPUT B
INPUT A
INPUT A
VEE/GND
VEE/GND
VEE/GND
VEE/GND
OUTPUT A

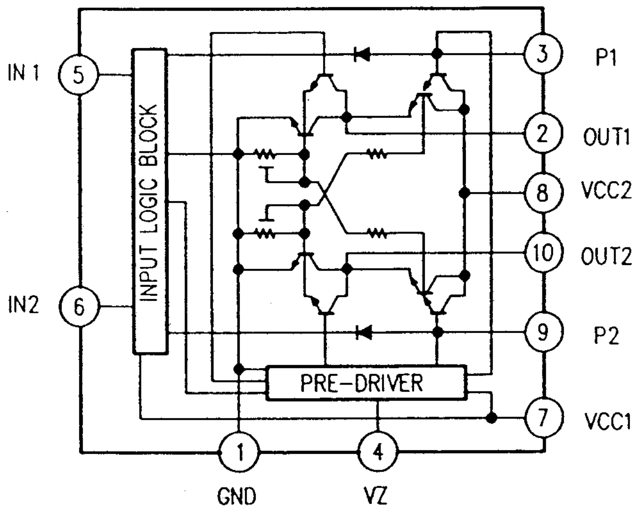
TC4S69F : IC213, 410



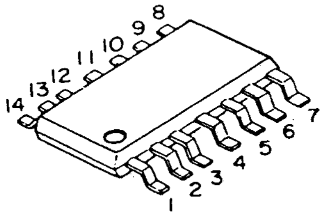

NC
1
IN
2
VSS
3
5
VDD
4
OUT

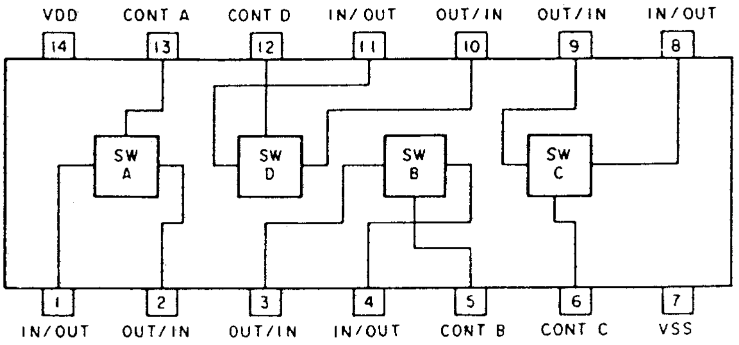
LB1641 : IC301


1
2
3
4
5
6
7
8
9
10

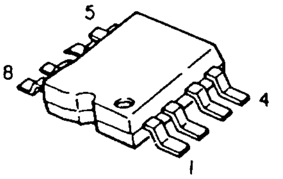

IN 1
5
IN2
6
INPUT LOGIC BLOCK
PRE-DRIVER
3
P1
2
OUT1
8
VCC2
10
OUT2
9
P2
7
VCC1
1
GND
4
VZ

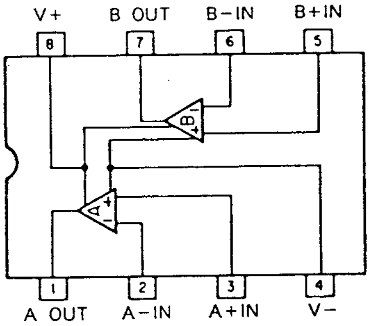
BU4066BF : IC401


1
2
3
4
5
6
7
8
9
10
11
12
13
14

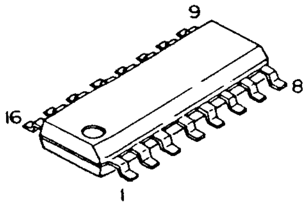

VDD
14
CONT A
13
CONT D
12
IN/OUT
11
OUT/IN
10
OUT/IN
9
IN/OUT
8
SW A
SW D
SW B
SW C
1
IN/OUT
2
OUT/IN
3
OUT/IN
4
IN/OUT
5
CONT B
6
CONT C
7
VSS

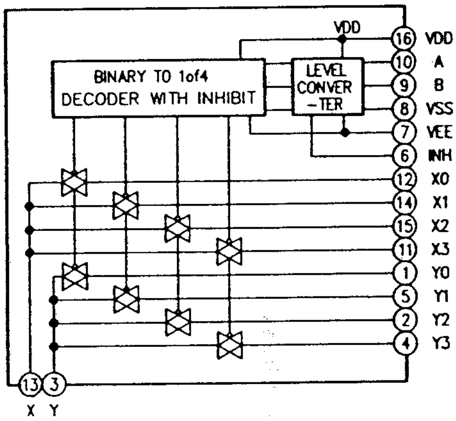
BA4560 : IC104, 402, 403, 404, 405, 406, 408, 409, 604, 607
NJM4560E : IC104, 402, 403, 404, 405, 406, 408, 409, 604, 607



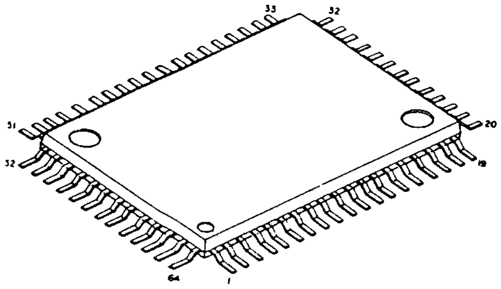

V+
B OUT
B−IN
B+IN
8
7
6
5
B
A
1
2
3
4
A OUT
A−IN
A+IN
V−

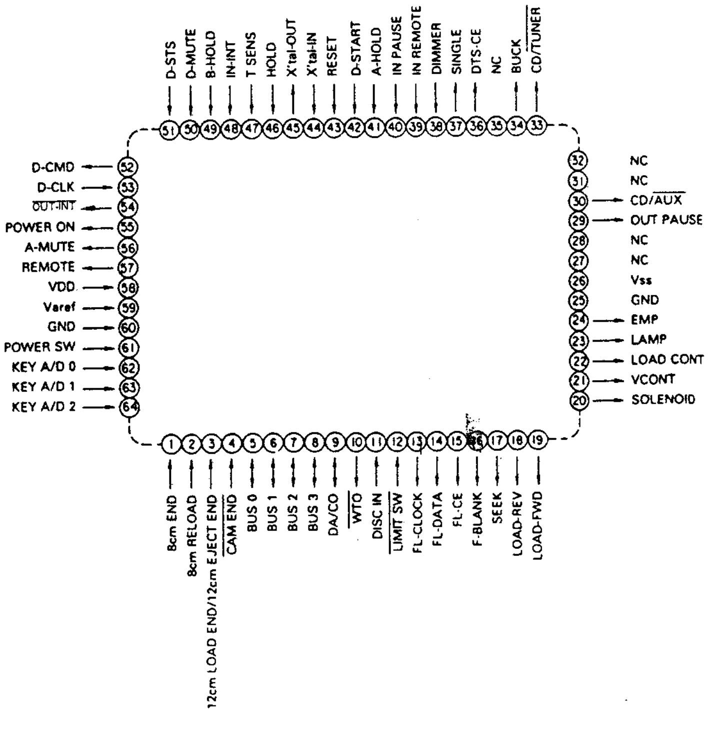
BA4052BF : IC407



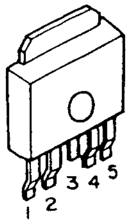

VDD
BINARY TO 1of4
DECODER WITH INHIBIT
LEVEL
CONVER
-TER
16 VDD
10 A
9 B
8 VSS
7 VEE
6 INH
12 X0
14 X1
15 X2
11 X3
1 Y0
5 Y1
2 Y2
4 Y3
13 X
3 Y

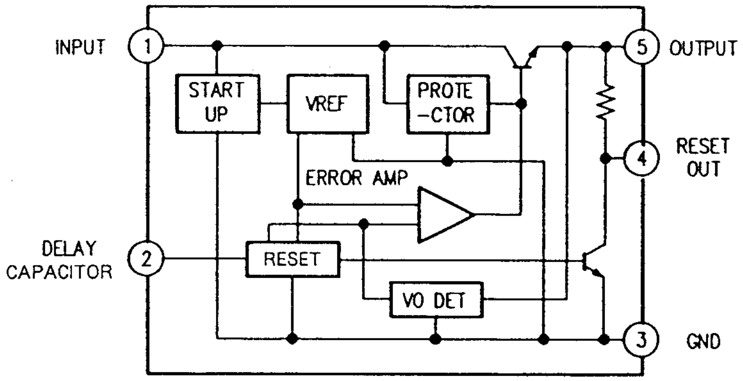
15263W01
15778W01 : IC601


33
32
51
52
20
19
64
1

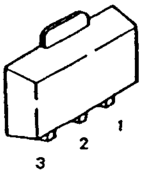

51 D-STS
50 D-MUTE
49 B-HOLD
48 IN-INT
47 T SENS
46 HOLD
45 X'tal-OUT
44 X'tal-IN
43 RESET
42 D-START
41 A-HOLD
40 IN PAUSE
39 IN REMOTE
38 DIMMER
37 SINGLE
36 DTS-CE
35 NC
34 BUCK
33 CD/TUNER
52 D-CMD
53 D-CLK
54 OUT-INT
55 POWER ON
56 A-MUTE
57 REMOTE
58 VDD
59 Varef
60 GND
61 POWER SW
62 KEY A/D 0
63 KEY A/D 1
64 KEY A/D 2
32 NC
31 NC
30 CD/AUX
29 OUT PAUSE
28 NC
27 NC
26 Vss
25 GND
24 EMP
23 LAMP
22 LOAD CONT
21 VCONT
20 SOLENOID
1 8cm END
2 8cm RELOAD
3 12cm LOAD END/12cm EJECT END
4 CAM END
5 BUS 0
6 BUS 1
7 BUS 2
8 BUS 3
9 DA/CO
10 WTO
11 DISC IN
12 LIMIT SW
13 FL-CLOCK
14 FL-DATA
15 FL-CE
16 F-BLANK
17 SEEK
18 LOAD-REV
19 LOAD-FWD

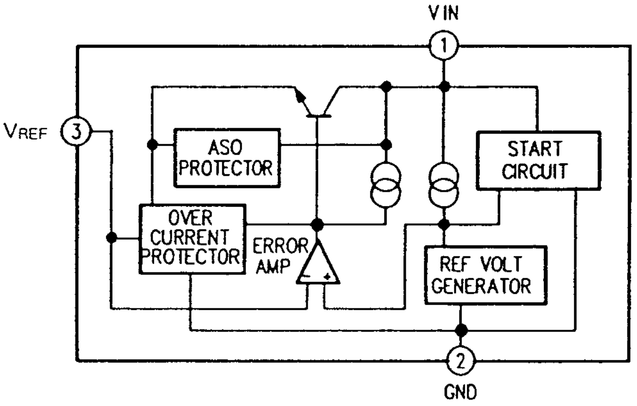
L78LR05DFA : IC602



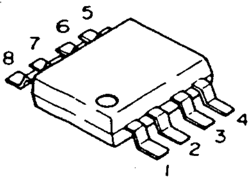

INPUT
1
START UP
VREF
PROTE -CTOR
5
OUTPUT
4
RESET OUT
ERROR AMP
DELAY CAPACITOR
2
RESET
VO DET
3
GND

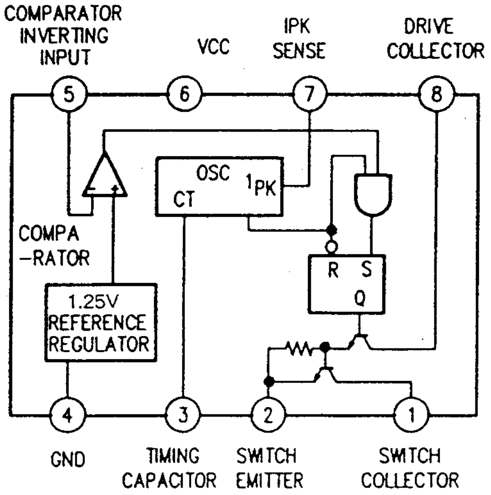
M5236ML : IC603



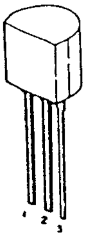

VIN
1
VREF
3
ASO PROTECTOR
START CIRCUIT
OVER CURRENT PROTECTOR
ERROR AMP
REF VOLT GENERATOR
2
GND

MC34063M : IC605

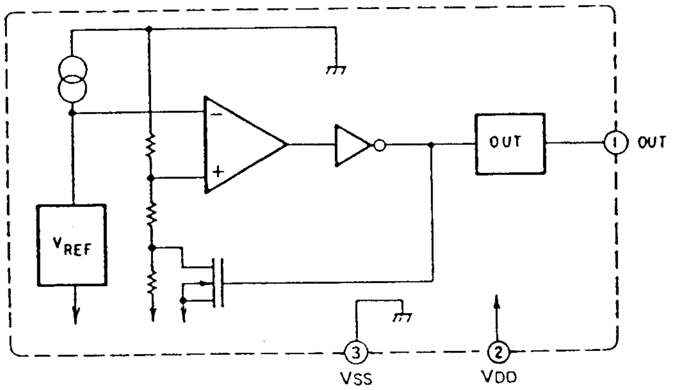



COMPARATOR INVERTING INPUT
VCC
IPK SENSE
DRIVE COLLECTOR
5
6
7
8
OSC
CT
IPK
COMPA -RATOR
R
S
Q
1.25V REFERENCE REGULATOR
4
3
2
1
GND
TIMING CAPACITOR
SWITCH EMITTER
SWITCH COLLECTOR

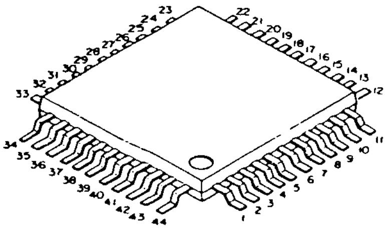
S-8052ALR : IC606

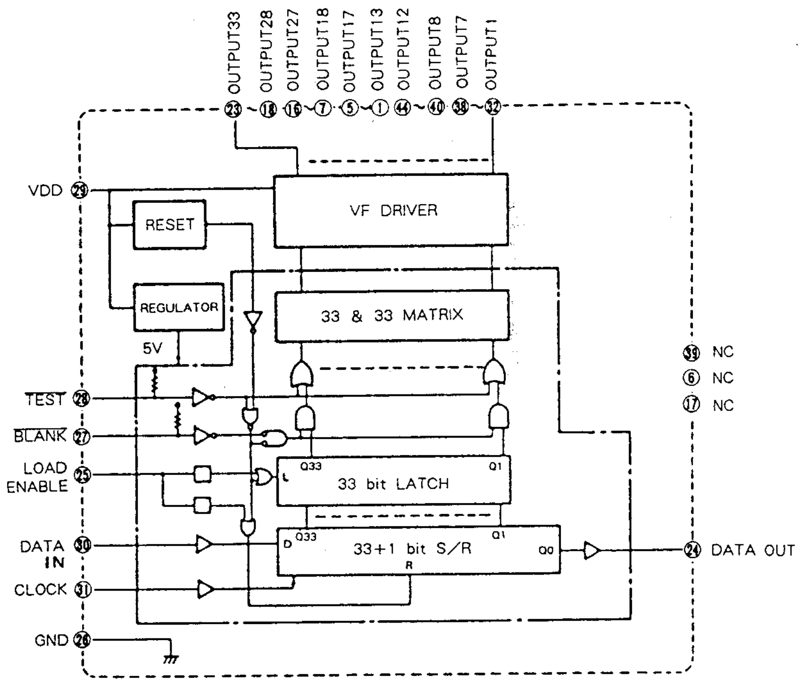


1.OUT
2.VDD
3.VSS

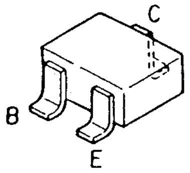

V_REF
−
+
OUT
1 OUT
3
VSS
2
VDD

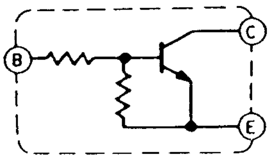
MSC1149GS : IC901, 902


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

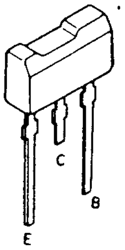

OUTPUT33
OUTPUT28
OUTPUT27
OUTPUT18
OUTPUT17
OUTPUT13
OUTPUT12
OUTPUT8
OUTPUT7
OUTPUT1
㉓~⑱ ⑯~⑦ ⑤~① ㊹~㊵ ㊳~㉜
VDD ㉙
RESET
VF DRIVER
REGULATOR
33 & 33 MATRIX
5V
TEST ㉘
BLANK ㉗
LOAD ENABLE ㉕
Q33
Q1
33 bit LATCH
DATA IN ㉚
D
Q33
33+1 bit S/R
Q1
Q0
R
CLOCK ㉛
GND ㉖
㊴ NC
⑥ NC
⑰ NC
㉔ DATA OUT

DTC124EU : Q101, 104, 105, 106, 109, 112, 116, 205, 210, 404, 406, 601, 603, 604, 605,
Q607, 608, 611, 612, 613, 616, 618, 621, 623, 629, 630, 634,
Q635, 639, 642
DTC144EU : Q203, 407, 408
DTC124K : Q305 (DP24A010)

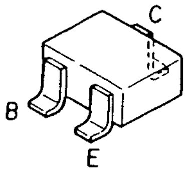


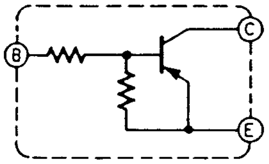


2SB1237 : Q107, 108, 201, 626
2SD1858 : Q110, 113
Q307, 308 (DP24A010)
2SB1326 : Q204
2SD1993 : Q102, 103

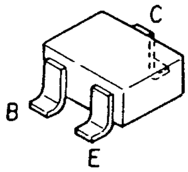


DTA124EU : Q111, 202, 211, 606, 620, 628, 632, 633, 636
DTA124 : Q306 (DP24A010)
DTA114EU : Q617, 638

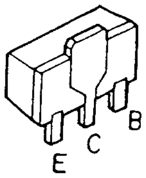




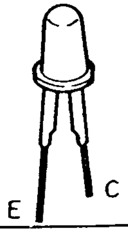
2SD1383K : Q206
2SC4081 : Q115, 208, 631, 645
2SD1328 : Q403, 405
2SA1576 : Q610
2SA1037K : Q627
2SA1036K : Q641, 901
2SC2411K : Q903

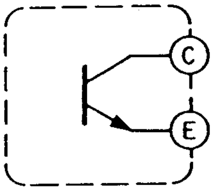


2SD1664 : Q207
2SB1132 : Q209, 614, 615

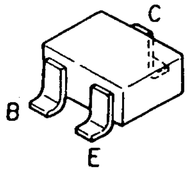


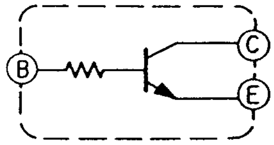
PT360 : PT301, 302, 303, 304 (DP24A010)



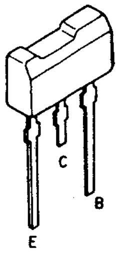


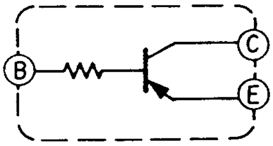
DTC114TU : Q117, 118
DTC343T : Q401, 402



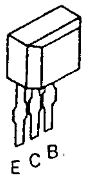


DTA114TU : Q609

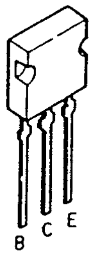




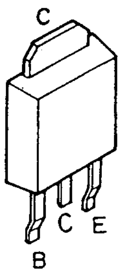
2SD2008 : Q619, 622



2SB1360E : Q625



2SB1261 : Q637



05057

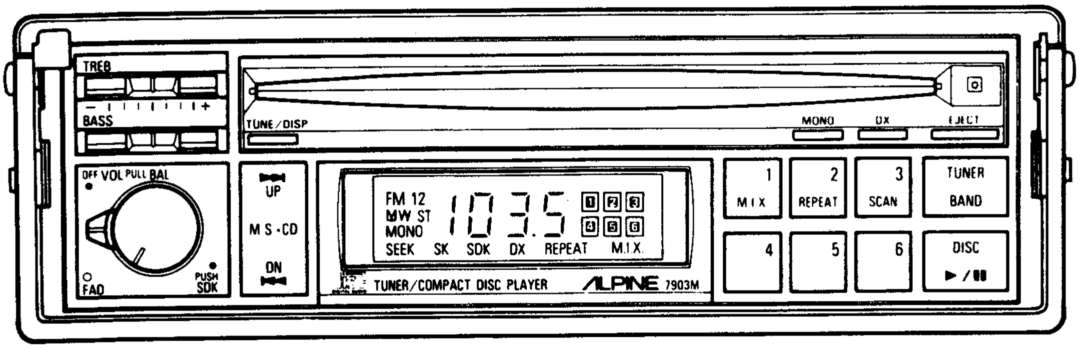
2/21/5/1

ALPINE SERVICE MANUAL

Digital FM/MW/LW
Compact Disc Player

REVISED

- Serial Numbers after No. 90717701.
- For the CD player mechanism parts of this model, refer to the Service Manual · DP-S Series (Part No. 68P13315W02).

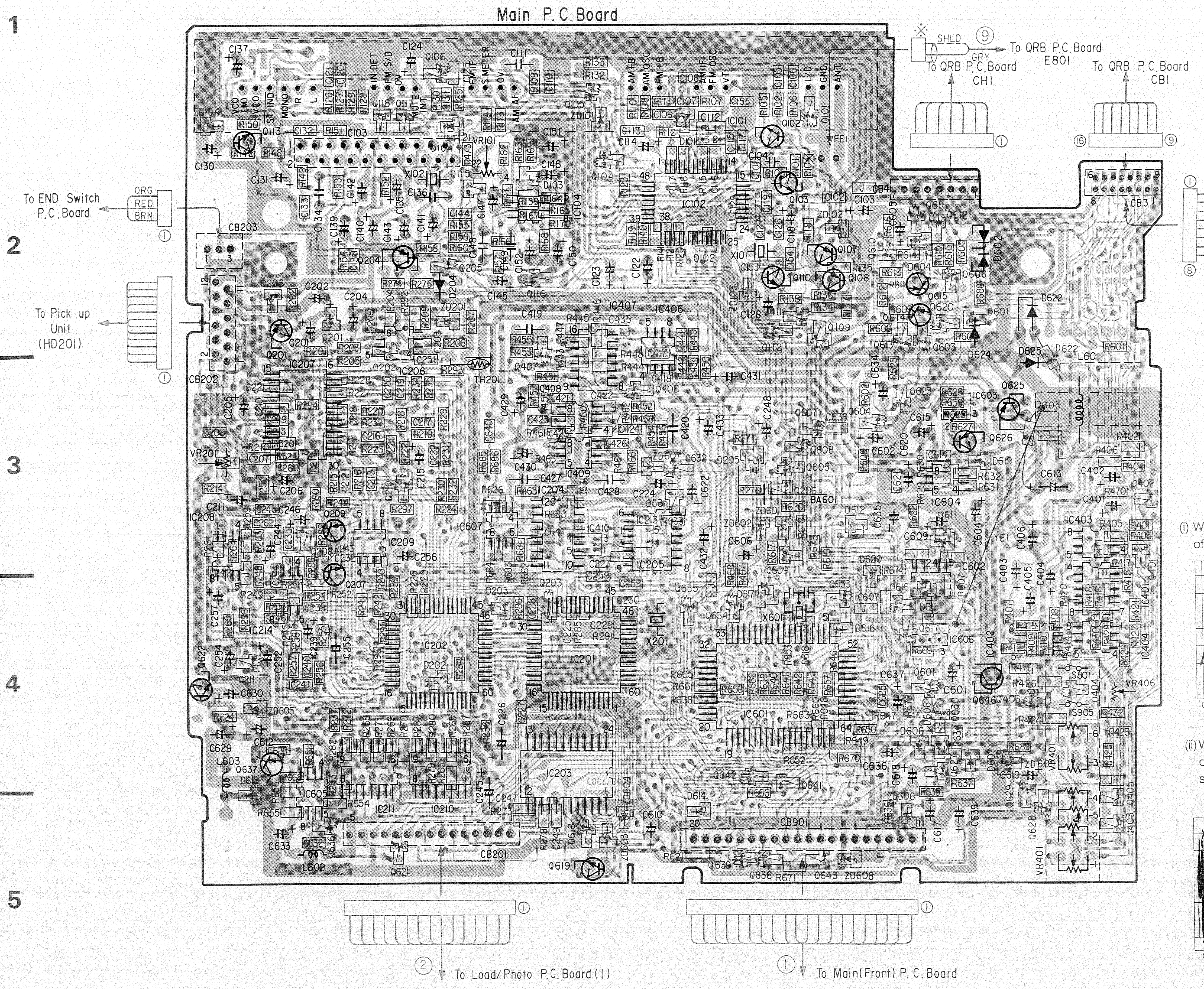

TREB
BASS
TUNE/DISP
MONO
DX
EJECT
OFF VOL PULL BAL
FAD
PUSH SDK
UP
M S·CD
DN
FM 12
MW ST
MONO
103.5
SEEK SK SDK DX REPEAT M.I.X.
TUNER/COMPACT DISC PLAYER
ALPINE 7903M
1 M I X
2 REPEAT
3 SCAN
4
5
6
TUNER BAND
DISC ►/II

7903M

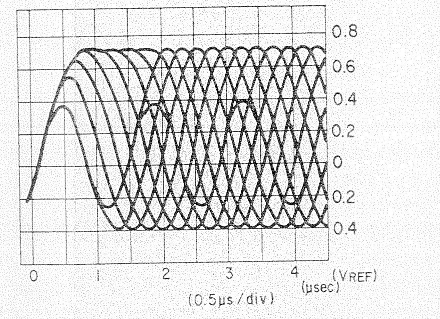
Contents

Parts Layout on P. C. Boards and Wiring Diagram (1/2) ……… 3 to 5
Parts Layout on P. C. Boards and Wiring Diagram (2/2) ……… 6 to 8
Schematic Diagram (1/3) ……… 9 to 11
Schematic Diagram (2/3) ……… 12 to 14
Schematic Diagram (3/3) ……… 15 to 16
Electrical Parts List ……… 17 to 25
Packing Assembly Parts List ……… 26

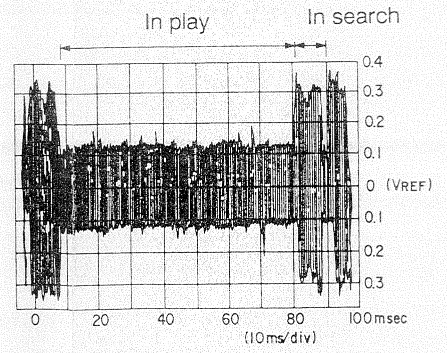
Parts Layout on P.C. Boards and Wiring Diagram (1/2)


Main P.C.Board
1
2
3
4
5
To END Switch P.C.Board
ORG
RED
BRN
CB203
To Pick up Unit (HD201)
CB202
SHLD
GRY
⑨
To QRB P.C.Board E801
To QRB P.C.Board CH1
To QRB P.C.Board CB1
①
⑯
⑨
CB4
CB3
To QRB P.C.Board CB1
⑧
CB201
CB901
② To Load/Photo P.C.Board (1)
① To Main(Front) P.C.Board
IC102
IC202
IC201
IC203
IC601
IC603
IC604
IC606
X101
X201
X601
VR101
VR201
VR401
VR406
S801
S905
L601
L602
L603
TH201
VCO
ST IND
MONO
R
L
IN DET
FM S/D
OV
MUTE
EMIF
S.METER
AM AF
AM+B
AM OSC
FM+B
AM IF
FM OSC
VT
L/O
GND
ANT
FE1
YEL

(i) Waveform at RFO terminal (No. 10 pin of IC701, TA8101F), when unit in play.



(ii) Waveform at TSO terminal (No. 22 pin of IC701, TA8101F), when unit in play/search.



IC101

1	0V
2	3.7V
3	1.5V
4	1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	
20	PS	44	
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC401

1	4.4V	6	8.7V	11	4.4V
2	4.4V	7	0V	12	0V
3	4.4V	8	4.4V	13	0V
4	4.4V	9	4.4V	14	8.7V
5	8.7V	10	4.4V		

IC402

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC409

1	4.7V
2	4.7V
3	3.1V
4	0V
5	3.1V
6	4.7V
7	4.7V
8	8.7V

IC410

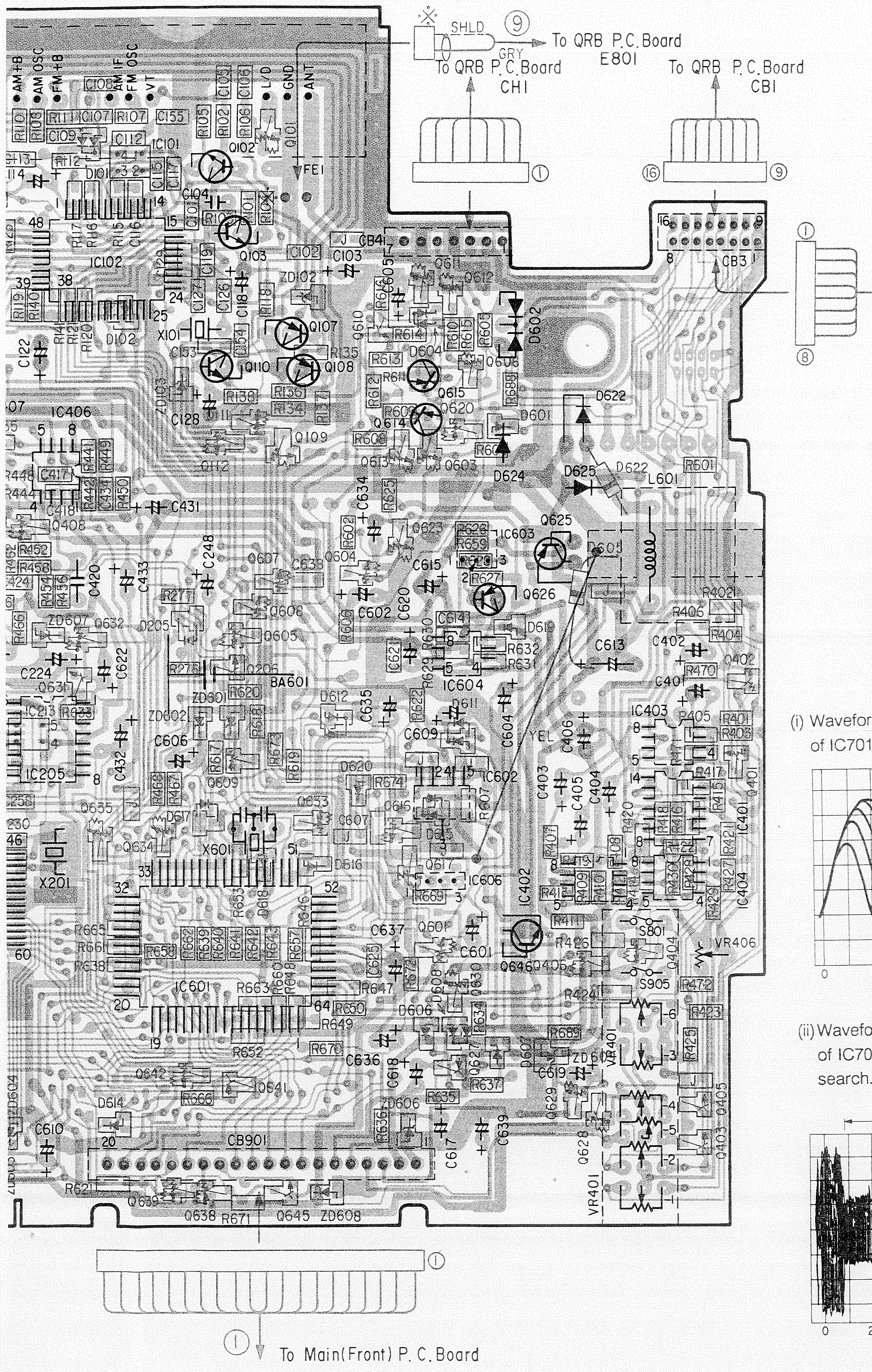
1	0V
2	PS
3	0V
4	PS
5	5V

IC601

1	0V/5V	23	2.2V/0V	45	PS
2	0V/5V	24	3.6V/0V	46	4.6V/0V
3	0V/5V	25	0V	47	0V/5V
4	0V/5V	26	0V	48	4.6V/0V
5	PS	27	0V	49	5V/0V
6	PS	28	0V	50	4.9V/0V
7	PS	29	3.6V/0V	51	PS
8	PS	30	3.6V/0V	52	PS
9	PS	31	0V/PS	53	PS
10	4.8V	32	0V/4.9V	54	4.9V/0V
11	0V/5V	33	0V/4.2V	55	4.5V/0V
12	4.8V/0V	34	PS	56	4.3V/0V
13	PS	35	4.9V	57	4.3V/0V
14	PS	36	4.9V/0V	58	4.9V
15	PS	37	0V/4.9V	59	4.9V
16	5V/0V	38	4.9V/0V	60	0V
17	0V/5V	39	4.8V/0V	61	0V/4.9V
18	0V/5V	40	4.8V/0V	62	–
19	0V/5V	41	5V/0V	63	–
20	0V/5V	42	0V/PS	64	–
21	3.9V/0V	43	5V/0V		
22	0V/5V	44	PS		

62,63,64
1/6 VDD,2/6 VDD,3/6 VDD,4/6 VDD,5/6 VDD ,VDD

ram (1/2)



IC101

1	0V
2	3.7V
3	1.5V
4	1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	
20	PS	44	
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC203

1	PS	13	PS
2	PS	14	PS
3	PS	15	PS
4	PS	16	PS
5	PS	17	PS
6	PS	18	0V
7	PS	19	PS
8	PS	20	PS
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	0V	24	5V

IC204

1	2.3V	11	1.2V
2	2.3V	12	0V
3	2.3V	13	0V
4	2.3V	14	2.3V
5	2.3V	15	0V
6	0V	16	0V
7	0V	17	0V
8	0V	18	0V
9	0.4V	19	0V
10	2.3V	20	1.5V

IC205

1	PS	9	5V
2	PS	10	PS
3	5V	11	PS
4	PS	12	PS
5	PS	13	PS
6	0V	14	PS
7	PS	15	PS
8	0V	16	5V

IC206

1	0.6V
2	5V
3	2.6V
4	0V
5	0.2V/0V
6	0.2V
7	2.8V
8	5V

IC207

1	2V	11	2.2V	21	2.2V
2	2V	12	2.2V	22	2.2V
3	2.2V	13	2.2V	23	2.2V
4	2V	14	0V	24	2.2V
5	2V	15	PS	25	2.2V
6	2V	16	1V	26	2.8V
7	2V	17	PS	27	2.2V
8	5V	18	1V	28	2.2V
9	2V	19	PS	29	2.2V
10	2V	20	2.5V	30	2.2V

IC208

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC209

1	2.5V
2	2.5V
3	2.5V
4	0V
5	4.1V
6	4.1V
7	3.5V
8	8V

IC210

1	0V	9	0V
2	0V	10	0V
3	4.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC211

1	0V	9	0V
2	0V	10	0V
3	2.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC213

1	0V
2	PS
3	0V
4	PS
5	5V

IC214

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC401

1	4.4V	6	8.7V	11	4.4V
2	4.4V	7	0V	12	0V
3	4.4V	8	4.4V	13	0V
4	4.4V	9	4.4V	14	8.7V
5	8.7V	10	4.4V		

IC402

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC409

1	4.7V
2	4.7V
3	3.1V
4	0V
5	3.1V
6	4.7V
7	4.7V
8	8.7V

IC410

1	0V
2	PS
3	0V
4	PS
5	5V

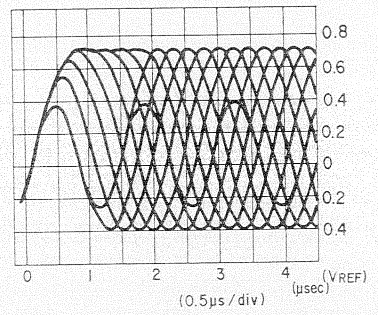
IC201

1	PS	11	PS	21	0V	31	0V	41	PS	51	5V
2	PS	12	PS	22	0V	32	PS	42	PS	52	5V
3	PS	13	PS	23	5V	33	PS	43	PS	53	5V
4	PS	14	PS	24	5V	34	PS	44	PS	54	0V
5	PS	15	PS	25	PS	35	PS	45	PS	55	5V
6	PS	16	PS	26	PS	36	5V	46	0V	56	PS
7	PS	17	PS	27	PS	37	0V	47	PS	57	PS
8	PS	18	5V	28	PS	38	PS	48	PS	58	PS
9	PS	19	5V	29	PS	39	PS	49	5V	59	PS
10	PS	20	0V	30	0V	40	PS	50	5V	60	PS

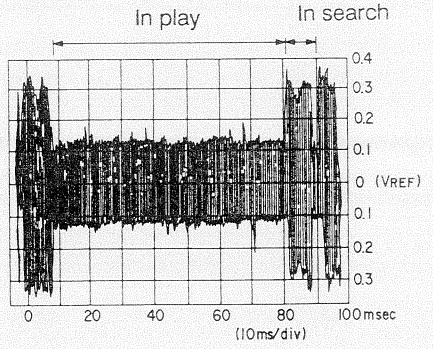
IC202

1	PS	11	PS	21	PS	31	0V/PS	41	0V	51	PS
2	5V/0V	12	2.2V	22	2.2V	32	0V/4.9V	42	PS	52	PS
3	5V/0V	13	2.2V	23	5V	33	0V/4.2V	43	PS	53	PS
4	PS	14	2.2V	24	2.2V	34	PS	44	PS	54	4.9V/0V
5	PS	15	2.2V	25	2.2V	35	4.9V	45	5V	55	4.5V/0V
6	PS	16	2.2V	26	2.2V	36	4.9V/0V	46	5V	56	4.3V/0V
7	2.2V	17	2.2V	27	2V	37	0V/4.9V	47	PS	57	4.3V/0V
8	1V	18	2.2V	28	PS	38	4.9V/0V	48	PS	58	4.9V
9	PS	19	2.6V	29	PS	39	4.8V/0V	49	PS	59	4.9V
10	1V	20	2V	30	2.2V	40	4.8V/0V	50	PS	60	0V

(i) Waveform at RFO terminal (No. 10 pin of IC701, TA8101F), when unit in play.



(ii) Waveform at TSO terminal (No. 22 pin of IC701, TA8101F), when unit in play/search.



IC601

1	0V/5V	23	2.2V/0V	45	PS
2	0V/5V	24	3.6V/0V	46	4.6V/0V
3	0V/5V	25	0V	47	0V/5V
4	0V/5V	26	0V	48	4.6V/0V
5	PS	27	0V	49	5V/0V
6	PS	28	0V	50	4.9V/0V
7	PS	29	3.6V/0V	51	PS
8	PS	30	3.6V/0V	52	PS
9	PS	31	0V/PS	53	PS
10	4.8V	32	0V/4.9V	54	4.9V/0V
11	0V/5V	33	0V/4.2V	55	4.5V/0V
12	4.8V/0V	34	PS	56	4.3V/0V
13	PS	35	4.9V	57	4.3V/0V
14	PS	36	4.9V/0V	58	4.9V
15	PS	37	0V/4.9V	59	4.9V
16	5V/0V	38	4.9V/0V	60	0V
17	0V/5V	39	4.8V/0V	61	0V/4.9V
18	0V/5V	40	4.8V/0V	62	–
19	0V/5V	41	5V/0V	63	–
20	0V/5V	42	0V/PS	64	–
21	3.9V/0V	43	5V/0V		
22	0V/5V	44	PS		

62,63,64
1/6 VDD,2/6 VDD,3/6 VDD,4/6 VDD,5/6 VDD ,VDD

IC602

1	14V
2	7.8V
3	0.6V
4	5.7V
5	5.7V

IC603

1	13.5V
2	0V
3	1.3V

IC604

1	8.2V
2	0.4V
3	2.4V
4	0V
5	4.3V
6	4.4V
7	4.4V
8	8.7V

IC605

1	PS
2	0V
3	PS
4	0V
5	1.3V
6	13.9V
7	13.9V
8	PS

IC606

1	5V/0V
2	5V
3	0V

IC607

1	4V
2	1V
3	4V
4	0V
5	3V
6	1V
7	4V
8	4.6V

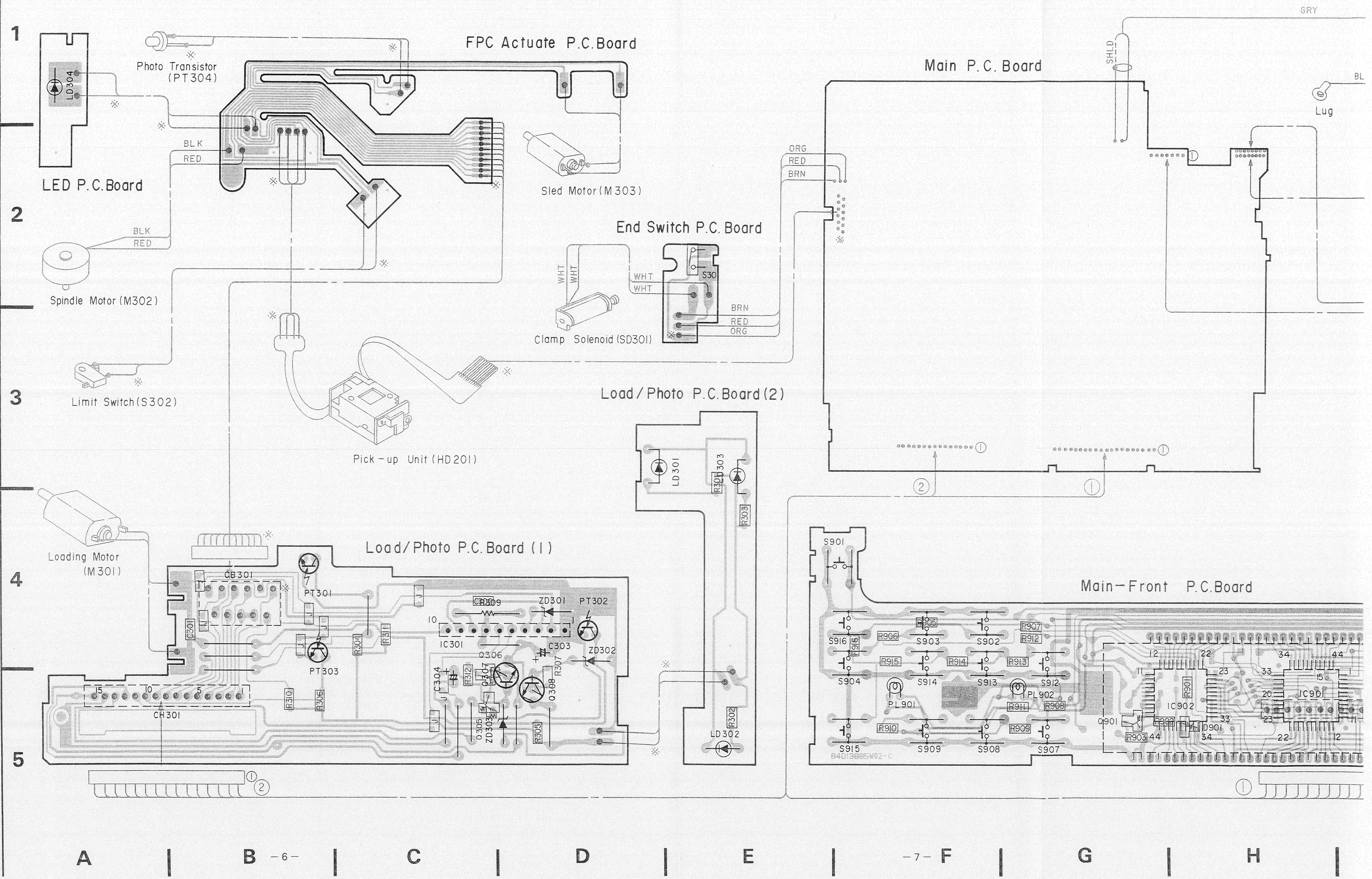
	E	C	B		E	C	B
Q101	0V	6.6V/0V	4.7V/0V	Q606	14V	14V	0V
Q102	0.1V	1.1V~7.4V	0.7V	Q607	0V/0V	4.7V/0V	0V/14.4V
Q103	0.7V	9.4V	1.1V	Q608	0V/0V	4.7V/0V	0V/14.4V
Q105	0V	0V	6.7V/0V	Q609	14.2V	14.2V	7.3V
Q106	0V	0V/7.7V	0V/4.7V	Q610	14V	14V	13.3V
Q107	8.8V	8.7V/0V	8.8V/8.1V	Q611	0V	0V	10V
Q108	8.8V	8.8V/1.4V	8.6V/8.1V	Q612	0V	0V	9.7V
Q109	0V	8.6V/0V	4.4V/1V	Q613	0V	0.1V	4.3V
Q110	8.8V	14V	9.4V	Q614	14V	14V	13.3V
Q111	0V/13V	13.9V/0V	0V/14V	Q615	14V	14V	13.4V
Q112	0V	0V/13.6V	5.1V/0V	Q616	0V	0V	4.5V
Q113	8.6V	13.7V	9.2V	Q617	5.1V	4.9V	0V
Q115	1V	2.9V	1.6V	Q618	0V	4V	0V
Q116	0V	3.3V	0.6V	Q619	7.6V	14V	8.2V
Q201	3.6V	1.9V	3V	Q621	0V	0V	3.9V
Q202	5.2V	0.3V	5.1V	Q922	5.1V	8.3V	5.7V
Q203	0V	2.2V	0V	Q623	0V	0.4V	3.3V
Q204	14V	0V	3.4V	Q625	14.1V	14.1V	13.4V
Q205	0V	14V	0V	Q626	14.1V	8.7V	13.5V
Q206	0V	0V	0V	Q627	10V	0.3V	10V
Q207	4.1V	8.3V	4.7V	Q629	0V	14V	0V
Q208	3.5V	4.7V	4.1V	Q630	0V	0V	4.3V
Q209	0V	4.1V	3.5V	Q631	2.4V	8.7V	3V
Q210	2.2V/2.2V	2.3V/2.3V	4.8V/0V	Q632	3V	0V	0V
Q211	2.3V	2.3V	5V	Q633	5.7V	4.5V	5.7V
PT301	0V	5V/0V	–	Q634	0V	8.7V	0V
PT302	0V	5V/0V	–	Q636	14.2V	14.1V	0V
PT303	0V	5V/0V	–	Q637	13.8V	PS	PS
PT304	0V	5V/0V	–	Q638	14V	13.1V	0V
Q401	0V	0V	0.2V	Q639	0V	0V	5V
Q402	0V	0V	0.2V	Q641	7.6V	7.4V	6.8V
Q404	0V	8.7V	0V	Q642	0V	0.2V	2.2V
Q406	0V	0V	3.5V	Q645	12.2V	13.3V	12.9V
Q407	0V	SIG	0V	Q646	14V	14V	13.5V
Q408	0V	SIG	0V	Q403	0V	0V	1V
Q601	0V/0V	4.8V/0V	0V/8.1V	Q405	0V	0V	1V
Q605	0V	0V	3.8V	Q603	0V	14V	4.9V
Q104	0V	0V	0.8V	Q604	0V	14V	1V
Q117	4.1V	4.1V	4.9V	Q628	14V	0.3V	14V
Q118	4.1V	4.1V	4.9V	Q620	14V	0V	14V

(Measuring Conditions)

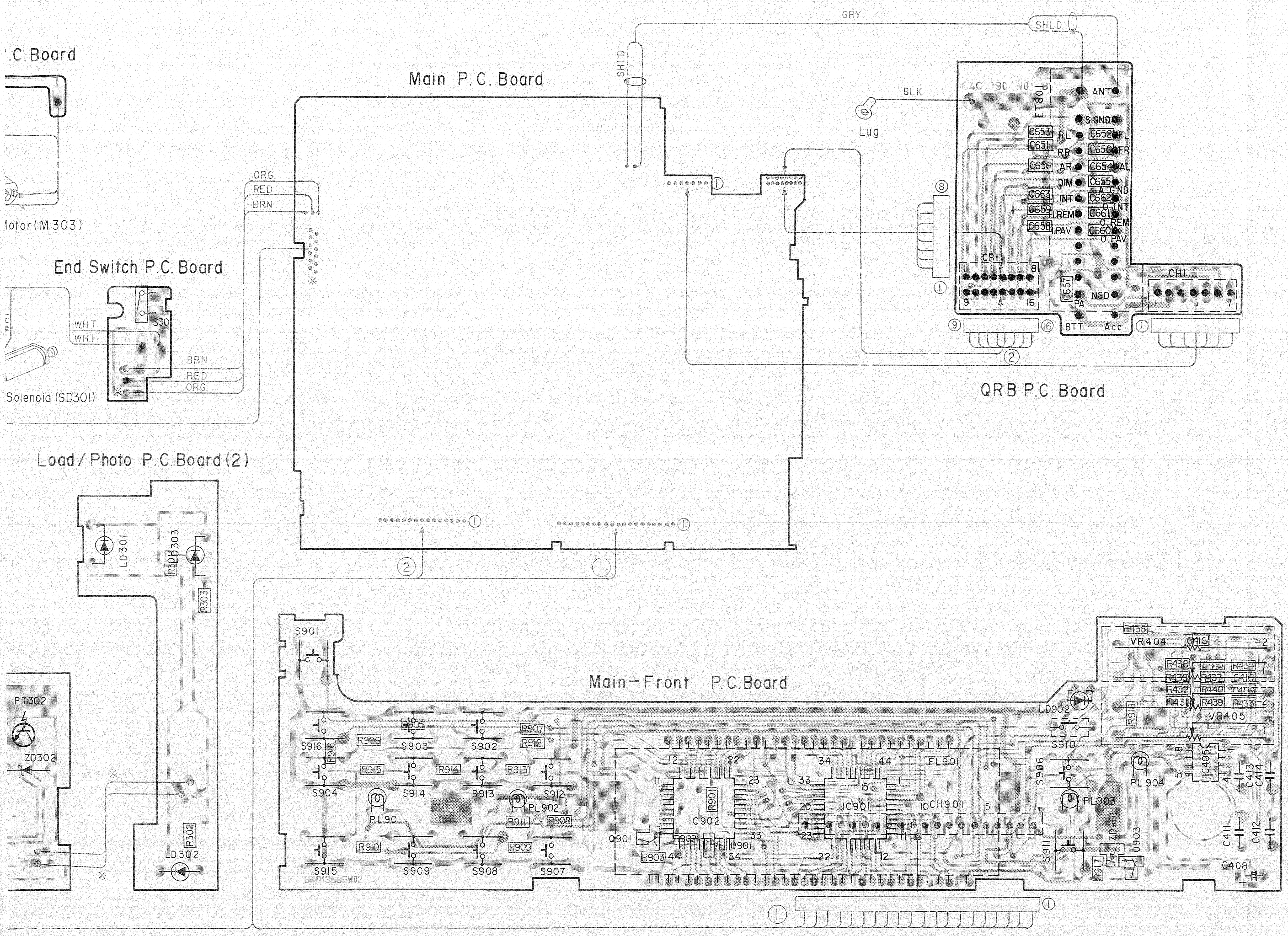
1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd. Music of the test CD(YEDS-18).

BLU	Blue	YEL	Yellow
GRN	Green	PNK	Pink
BLK	Black	VIO	Violet
GRY	Gray	GRN/WHT	Green/White
WHT	White	GRY/WHT	Gray/White
RED	Red	GRY/YEL	Gray/Yellow
BRN	Brown	GRN/YEL	Green/Yellow
ORG	Orange	SHLD	Shield

Parts Layout on P.C. Boards and Wiring Diagram (2/2)


1
2
3
4
5
FPC Actuate P.C.Board
Photo Transistor (PT304)
LD304
LED P.C.Board
BLK
RED
Sled Motor (M303)
Main P.C. Board
SHLD
GRY
BL
Lug
ORG
RED
BRN
End Switch P.C.Board
S30
WHT
WHT
WHT
WHT
BRN
RED
ORG
Clamp Solenoid (SD301)
BLK
RED
Spindle Motor (M302)
Limit Switch (S302)
Pick-up Unit (HD201)
Load/Photo P.C.Board (2)
LD301
R301
303
R303
R302
LD302
Loading Motor (M301)
Load/Photo P.C.Board (1)
CB301
PT301
C301
PT303
R304
R311
R309
C309
ZD301
PT302
IC301
10
Q306
C303
ZD302
R307
C304
R312
Q307
Q308
Q305
ZD303
R305
R310
R306
15
10
5
CH301
①
②
②
①
①
①
①
S901
Main-Front P.C.Board
S916
F916
R906
R305
S903
S902
R907
R912
R915
R914
R913
S904
S914
S913
S912
PL901
PL902
R901
R911
R908
R910
R909
S915
S909
S908
S907
Q901
R902
R903
D901
IC902
IC901
12
22
34
44
11
23
33
15
20
23
33
44
34
22
12
84D13885W02-C
A
B
C
D
E
F
G
H

2/2)


.C. Board
Main P.C. Board
SHLD
GRY
SHLD
BLK
Lug
84C10904W01
ET801
ANT
S.GND
C653
RL
C652
FL
C651
RR
C650
FR
C656
AR
C654
AL
DIM
C655
A.GND
C663
INT
C662
O.INT
C659
REM
C661
O.REM
C658
PAV
C660
O.PAV
CB1
CH1
C657
NGD
PA
BTT
Acc
QRB P.C. Board
ORG
RED
BRN
Motor (M303)
End Switch P.C. Board
WHT
WHT
S30
BRN
RED
ORG
Solenoid (SD301)
Load / Photo P.C. Board (2)
LD301
LD303
R301
R303
R302
LD302
PT302
ZD302
Main-Front P.C. Board
S901
S916
F916
R906
R905
S903
S902
R907
R912
R915
R914
R913
S904
S914
S913
S912
PL901
PL902
R911
R908
S915
R910
S909
S908
R909
S907
B4D13885W02-C
Q901
R903
R902
IC902
R901
D901
IC901
FL901
CH901
LD902
S910
S906
PL903
PL904
S911
ZD901
Q903
R917
R918
R438
VR404
C416
R436
C415
R434
R435
R437
C418
R432
R440
C419
R431
R439
R433
VR405
IC405
C413
C414
C411
C412
C408

BLU	Blue
GRN	Green
BLK	Black
GRY	Gray
WHT	White
RED	Red
BRN	Brown
ORG	Orange
YEL	Yellow
PNK	Pink
VIO	Violet
GRN / WHT	Green / White
GRY / WHT	Gray / White
GRY / YEL	Gray / Yellow
GRN / YEL	Green / Yellow
SHLD	Shield

	E	C	B
Q305	0V	0V/13.9V	3.6V/0V
Q306	14V/0.7V	10.7V/0V	0V/13.9V
Q307	10.1V	14V	10.7V
Q308	5.1V/0V	10.1V/0V	5.8V/0V
Q901	0.7V	2V	1.4V
Q903	6.1V	7.4V	6.7V

IC301

1	0V
2	0V/6V
3	8V/0V
4	6V/0V
5	2V/0V
6	2V/0V
7	10V/0V
8	10V/0V
9	8V/0V
10	0V/6V

IC405

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

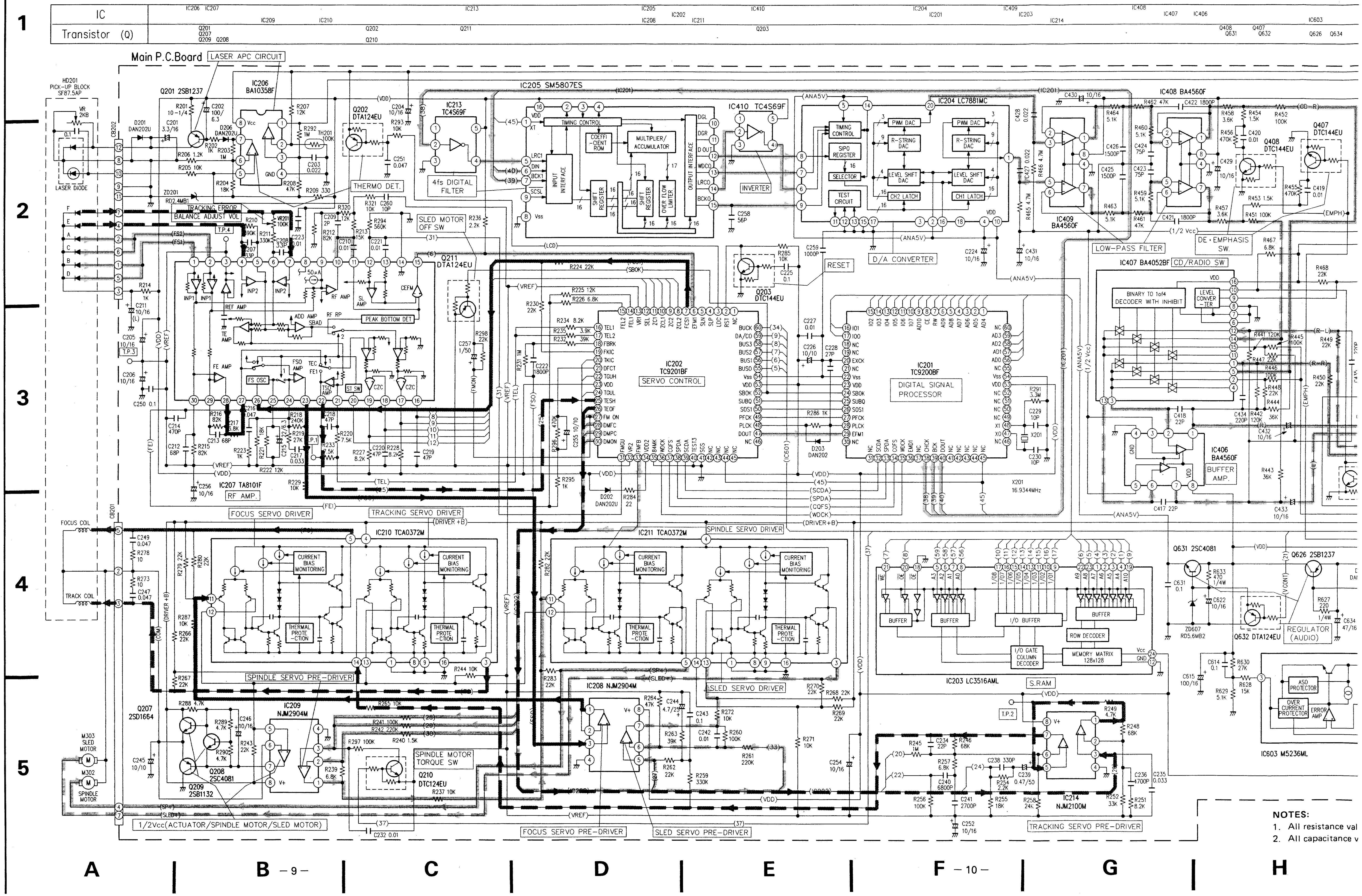
IC901

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

IC902

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30			

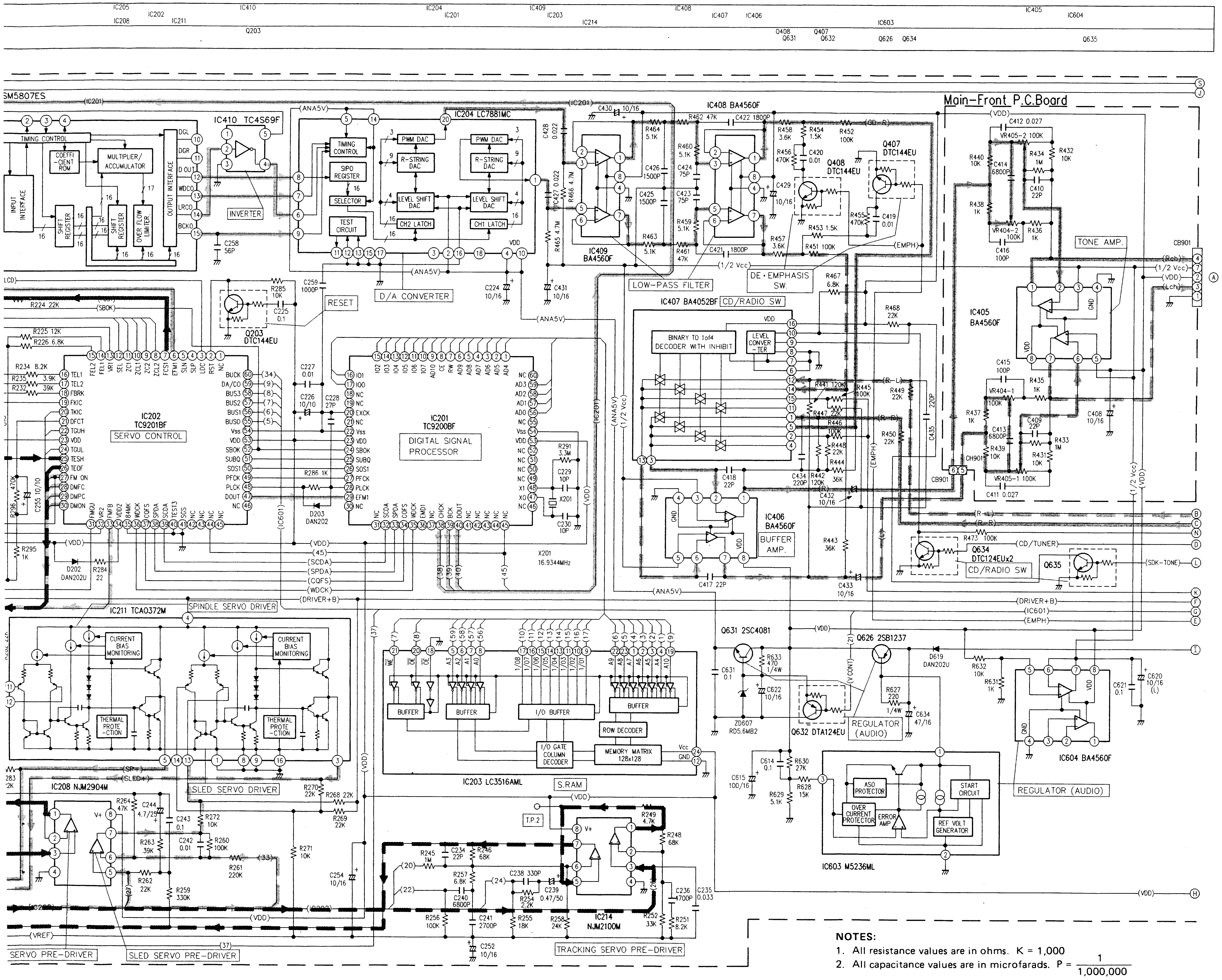
Schematic Diagram (1/3)



IC
Transistor (Q)
Main P.C.Board
LASER APC CIRCUIT
HD201 PICK-UP BLOCK SF87.5AP
LASER DIODE
Q201 2SB1237
IC206 BA10358F
Q202 DTA124EU
THERMO DET.
IC213 TC4S69F
4fs DIGITAL FILTER
IC205 SM5807ES
TIMING CONTROL
COEFFI-CIENT ROM
MULTIPLIER/ ACCUMULATOR
INPUT INTERFACE
SHIFT REGISTER
OVER FLOW LIMITER
OUTPUT INTERFACE
IC410 TC4S69F
INVERTER
IC204 LC7881MC
TIMING CONTROL
SIPO REGISTER
SELECTOR
TEST CIRCUIT
PWM DAC
R-STRING DAC
LEVEL SHIFT DAC
CH2 LATCH
CH1 LATCH
D/A CONVERTER
IC409 BA4560F
IC408 BA4560F
LOW-PASS FILTER
DE-EMPHASIS SW.
Q408 DTC144EU
Q407 DTC144EU
TRACKING ERROR BALANCE ADJUST VOL
SLED MOTOR OFF SW
Q211 DTA124EU
RESET
Q203 DTC144EU
IC407 BA4052BF CD/RADIO SW
BINARY TO 1of4 DECODER WITH INHIBIT
LEVEL CONVER-TER
IC202 TC9201BF SERVO CONTROL
IC201 TC9200BF DIGITAL SIGNAL PROCESSOR
X201 16.9344MHz
IC406 BA4560F BUFFER AMP.
IC207 TA8101F RF AMP.
REF AMP
RF AMP
ADD AMP
PEAK BOTTOM DET
FE AMP
FSO AMP
FS OSC
ST SW
TE AMP
FOCUS SERVO DRIVER
TRACKING SERVO DRIVER
IC210 TCA0372M
IC211 TCA0372M
SPINDLE SERVO DRIVER
CURRENT BIAS MONITORING
THERMAL PROTE-CTION
FOCUS COIL
TRACK COIL
SPINDLE SERVO PRE-DRIVER
SLED SERVO DRIVER
IC203 LC3516AML
BUFFER
I/O BUFFER
ROW DECODER
I/O GATE COLUMN DECODER
MEMORY MATRIX 128x128
S.RAM
Q631 2SC4081
Q626 2SB1237
ZD607 RD5.6MB2
Q632 DTA124EU
REGULATOR (AUDIO)
IC603 M5236ML
ASO PROTECTOR
OVER CURRENT PROTECTOR
ERROR AMP
Q207 2SD1664
Q208 2SC4081
Q209 2SB1132
IC209 NJM2904M
SPINDLE MOTOR TORQUE SW
Q210 DTC124EU
IC208 NJM2904M
IC214 NJM2100M
TRACKING SERVO PRE-DRIVER
M303 SLED MOTOR
M302 SPINDLE MOTOR
1/2Vcc(ACTUATOR/SPINDLE MOTOR/SLED MOTOR)
FOCUS SERVO PRE-DRIVER
SLED SERVO PRE-DRIVER
1
2
3
4
5
A
B
C
D
E
F
G
H

NOTES:

1. All resistance val
2. All capacitance v


IC205
IC208
IC202
IC211
IC410
Q203
IC204
IC201
IC409
IC203
IC214
IC408
IC407
IC406
Q408
Q631
Q407
Q632
IC603
Q626
Q634
IC405
IC604
Q635
SM5807ES
TIMING CONTROL
COEFFI-CIENT ROM
MULTIPLIER/ACCUMULATOR
INPUT INTERFACE
SHIFT REGISTER
SHIFT REGISTER
OVER FLOW LIMITER
OUTPUT INTERFACE
IC410 TC4S69F
INVERTER
IC204 LC7881MC
TIMING CONTROL
SIPO REGISTER
SELECTOR
TEST CIRCUIT
PWM DAC
R-STRING DAC
LEVEL SHIFT DAC
CH2 LATCH
PWM DAC
R-STRING DAC
LEVEL SHIFT DAC
CH1 LATCH
D/A CONVERTER
RESET
Q203 DTC144EU
IC409 BA4560F
IC408 BA4560F
LOW-PASS FILTER
Q408 DTC144EU
Q407 DTC144EU
DE-EMPHASIS SW.
Main-Front P.C.Board
TONE AMP.
IC405 BA4560F
CB901
IC407 BA4052BF CD/RADIO SW
BINARY TO 1of4 DECODER WITH INHIBIT
LEVEL CONVER-TER
IC406 BA4560F
BUFFER AMP.
Q634 DTC124EUx2
CD/RADIO SW
Q635
IC202 TC9201BF
SERVO CONTROL
IC201 TC9200BF
DIGITAL SIGNAL PROCESSOR
X201 16.9344MHz
IC211 TCA0372M
SPINDLE SERVO DRIVER
CURRENT BIAS MONITORING
THERMAL PROTE-CTION
SLED SERVO DRIVER
IC203 LC3516AML
BUFFER
I/O BUFFER
ROW DECODER
I/O GATE COLUMN DECODER
MEMORY MATRIX 128x128
S.RAM
Q631 2SC4081
Q626 2SB1237
Q632 DTA124EU
REGULATOR (AUDIO)
IC603 M5236ML
ASO PROTECTOR
OVER CURRENT PROTECTOR
ERROR AMP
START CIRCUIT
REF VOLT GENERATOR
IC604 BA4560F
IC208 NJM2904M
SERVO PRE-DRIVER
SLED SERVO PRE-DRIVER
IC214 NJM2100M
TRACKING SERVO PRE-DRIVER
T.P.2
ZD607 RD5.6MB2
D619 DAN202U
D202 DAN202U
D203 DAN202

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

IC201

1	PS	11	PS	21	0V	31	0V	41	PS	51	5V
2	PS	12	PS	22	0V	32	PS	42	PS	52	5V
3	PS	13	PS	23	5V	33	PS	43	PS	53	5V
4	PS	14	PS	24	5V	34	PS	44	PS	54	0V
5	PS	15	PS	25	PS	35	PS	45	PS	55	5V
6	PS	16	PS	26	PS	36	5V	46	0V	56	PS
7	PS	17	PS	27	PS	37	0V	47	PS	57	PS
8	PS	18	5V	28	PS	38	PS	48	PS	58	PS
9	PS	19	5V	29	PS	39	PS	49	5V	59	PS
10	PS	20	0V	30	0V	40	PS	50	5V	60	PS

IC203

1	PS	13	PS
2	PS	14	PS
3	PS	15	PS
4	PS	16	PS
5	PS	17	PS
6	PS	18	0V
7	PS	19	PS
8	PS	20	PS
9	PS	21	PS
10	PS	22	PS
11	PS	23	PS
12	0V	24	5V

IC202

1	PS	11	PS	21	PS	31	0V/PS	41	0V	51	PS
2	5V/0V	12	2.2V	22	2.2V	32	0V/4.9V	42	PS	52	PS
3	5V/0V	13	2.2V	23	5V	33	0V/4.2V	43	PS	53	PS
4	PS	14	2.2V	24	2.2V	34	PS	44	PS	54	4.9V/0V
5	PS	15	2.2V	25	2.2V	35	4.9V	45	5V	55	4.5V/0V
6	PS	16	2.2V	26	2.2V	36	4.9V/0V	46	5V	56	4.3V/0V
7	2.2V	17	2.2V	27	2V	37	0V/4.9V	47	PS	57	4.3V/0V
8	1V	18	2.2V	28	PS	38	4.9V/0V	48	PS	58	4.9V
9	PS	19	2.6V	29	PS	39	4.8V/0V	49	PS	59	4.9V
10	1V	20	2V	30	2.2V	40	4.8V/0V	50	PS	60	0V

IC204

1	2.3V	11	1.2V
2	2.3V	12	0V
3	2.3V	13	0V
4	2.3V	14	2.3V
5	2.3V	15	0V
6	0V	16	0V
7	0V	17	0V
8	0V	18	0V
9	0.4V	19	0V
10	2.3V	20	1.5V

IC205

1	PS	9	5V
2	PS	10	PS
3	5V	11	PS
4	PS	12	PS
5	PS	13	PS
6	0V	14	PS
7	PS	15	PS
8	0V	16	5V

IC206

1	0.6V
2	5V
3	2.6V
4	0V
5	0.2V/0V
6	0.2V
7	2.8V
8	5V

IC207

1	2V	11	2.2V	21	2.2V
2	2V	12	2.2V	22	2.2V
3	2.2V	13	2.2V	23	2.2V
4	2V	14	0V	24	2.2V
5	2V	15	PS	25	2.2V
6	2V	16	1V	26	2.8V
7	2V	17	PS	27	2.2V
8	5V	18	1V	28	2.2V
9	2V	19	PS	29	2.2V
10	2V	20	2.5V	30	2.2V

IC208

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC209

1	2.5V
2	2.5V
3	2.5V
4	0V
5	4.1V
6	4.1V
7	3.5V
8	8V

IC210

1	0V	9	0V
2	0V	10	0V
3	4.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC211

1	0V	9	0V
2	0V	10	0V
3	2.5V	11	4V
4	8V	12	4V
5	4V	13	4V
6	0V	14	4V
7	0V	15	0V
8	0V	16	0V

IC213

1	0V
2	PS
3	0V
4	PS
5	5V

IC214

1	2.2V
2	2.2V
3	2.2V
4	0V
5	2.2V
6	2.2V
7	2.2V
8	5V

IC405

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC406

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC407

1	4.4V	9	0V
2	4.4V	10	0V
3	4.4V	11	0V
4	0V	12	4.4V
5	3.5V	13	4.4V
6	0V	14	4.4V
7	0V	15	1.1V
8	0V	16	8.9V

IC408

1	4.7V
2	4.7V
3	4.6V
4	0V
5	1.3V
6	4.7V
7	4.7V
8	8.9V

IC409

1	4.7V
2	4.7V
3	3.1V
4	0V
5	3.1V
6	4.7V
7	4.7V
8	8.7V

IC410

1	0V
2	PS
3	0V
4	PS
5	5V

IC603

1	13.5V
2	0V
3	1.3V

IC604

1	8.2V
2	0.4V
3	2.4V
4	0V
5	4.3V
6	4.4V
7	4.4V
8	8.7V

	E	C	B
Q201	3.6V	1.9V	3V
Q202	5.2V	0.3V	5.1V
Q203	0V	2.2V	0V
Q210	2.2V/2.2V	2.3V/2.3V	4.8V/0V
Q407	0V	SIG	0V
Q408	0V	SIG	0V
Q626	14.1V	8.7V	13.5V
Q631	2.4V	8.7V	3V
Q632	3V	0V	0V
Q634	0V	8.7V	0V
Q211	2.3V	2.3V	5V
Q635			

	E	C	B
Q207	4.1V	8.3V	4.7V
Q208	3.5V	4.7V	4.1V
Q209	0V	4.1V	3.5V

▒▒▒▒	CD signal line (Digital)
▒▒ ▒▒	L-ch signal line
▒▒▒▒	R-ch signal line
▬▬▬	Focus servo signal line
▬ ▬	Tracking servo signal line
▒▒▒▒	Spindle servo signal line
▒▒ ▒▒	Sled servo signal line

[Measuring Conditions]

1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd.
   Music of the test CD(YEDS-18).

Schematic Diagram (2/3)

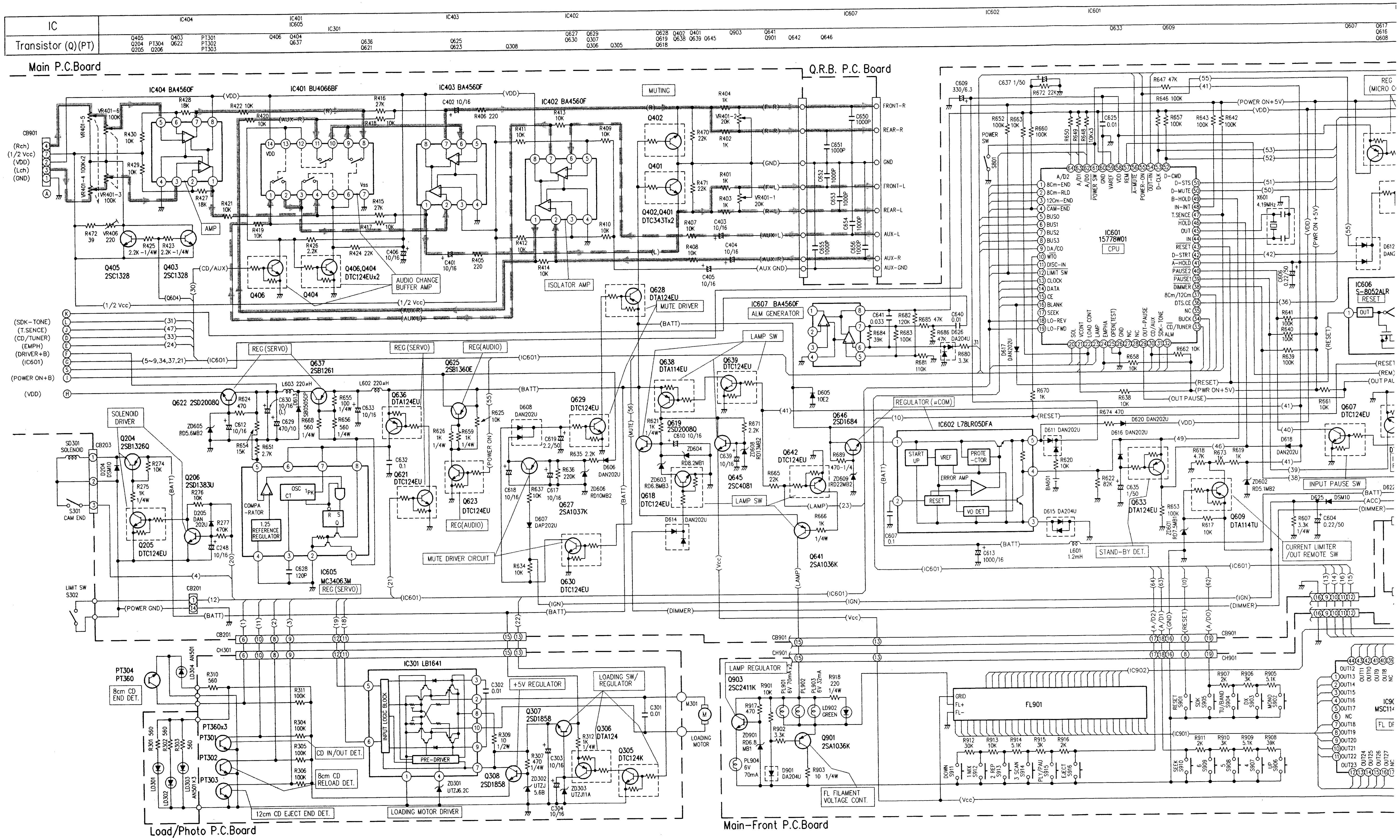
1

2

3

4

5

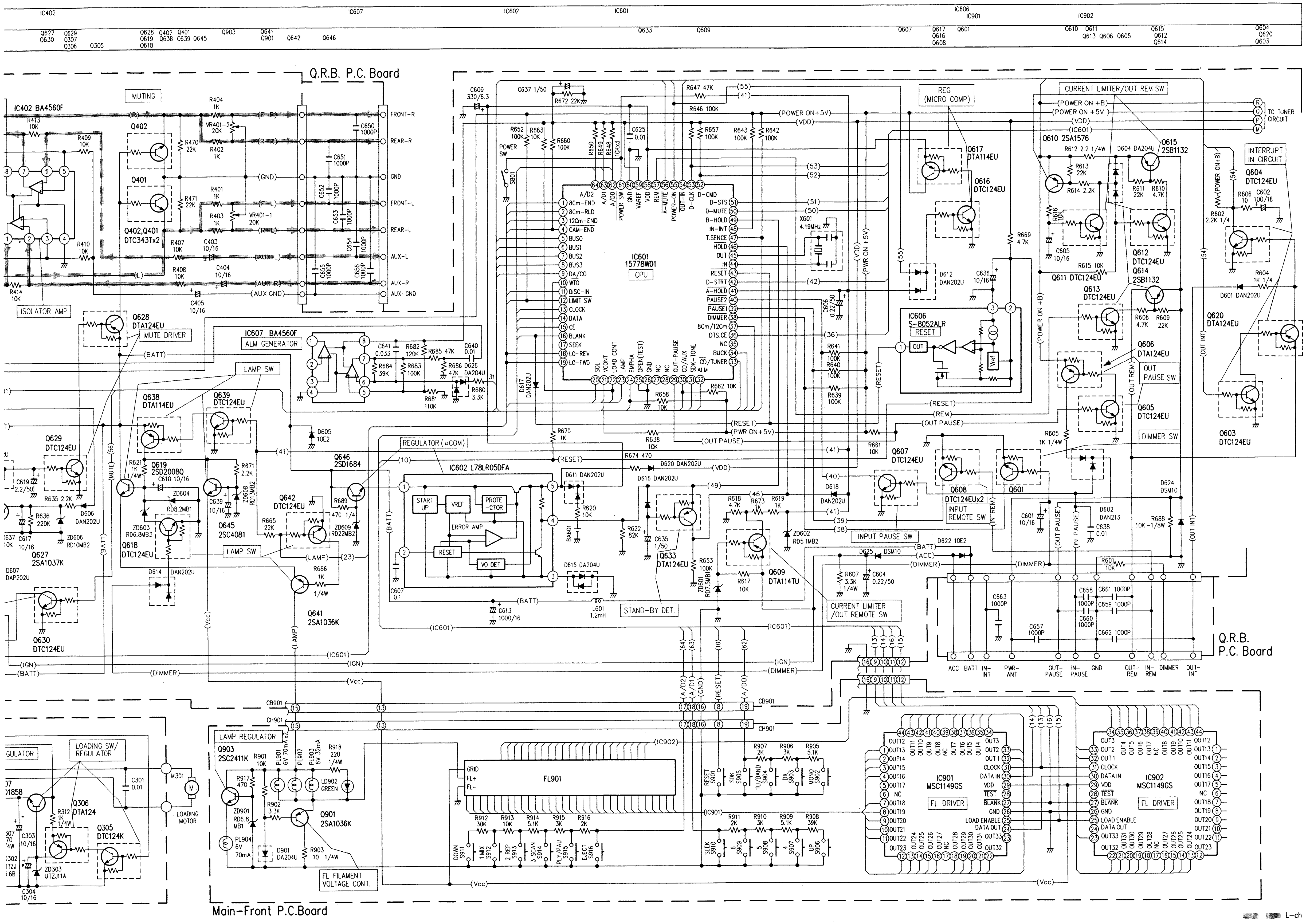

IC
Transistor (Q)(PT)
IC404
IC401 IC605
IC301
IC403
IC402
IC607
IC602
IC601
Main P.C.Board
Q.R.B. P.C. Board
IC404 BA4560F
IC401 BU4066BF
IC403 BA4560F
IC402 BA4560F
MUTING
AMP
AUDIO CHANGE BUFFER AMP
ISOLATOR AMP
Q402,Q401 DTC343Tx2
Q405 2SC1328
Q403 2SC1328
Q406,Q404 DTC124EUx2
Q628 DTA124EU
MUTE DRIVER
IC607 BA4560F
ALM GENERATOR
FRONT-R
REAR-R
GND
FRONT-L
REAR-L
AUX-L
AUX-R
AUX-GND
CB901
(Rch)
(1/2 Vcc)
(VDD)
(Lch)
(GND)
(SDK-TONE)
(T.SENCE)
(CD/TUNER)
(EMPH)
(DRIVER+B)
(IC601)
(POWER ON+B)
(VDD)
REG(SERVO)
REG(AUDIO)
Q637 2SB1261
Q622 2SD2008Q
Q625 2SB1360E
Q636 DTA124EU
Q621 DTC124EU
Q623 DTC124EU
Q629 DTC124EU
Q627 2SA1037K
Q630 DTC124EU
MUTE DRIVER CIRCUIT
SOLENOID DRIVER
Q204 2SB1326Q
Q206 2SD1383U
Q205 DTC124EU
SD301 SOLENOID
S301 CAM END
LIMIT SW S302
IC605 MC34063M
REG(SERVO)
COMPA-RATOR
1.25 REFERENCE REGULATOR
OSC
LAMP SW
Q638 DTA114EU
Q639 DTC124EU
Q619 2SD2008Q
Q618 DTC124EU
Q645 2SC4081
Q642 DTC124EU
Q641 2SA1036K
Q646 2SD1684
REGULATOR (μCOM)
IC602 L78LR05DFA
START UP
VREF
PROTE-CTOR
ERROR AMP
RESET
VO DET
STAND-BY DET.
IC601 15778W01 CPU
X601 4.19MHz
IC606 S-8052ALR
RESET
Q633 DTA124EU
Q609 DTA114TU
Q607 DTC124EU
INPUT PAUSE SW
CURRENT LIMITER /OUT REMOTE SW
POWER SW S801
CB201
CB203
CB901
CH301
CH901
(POWER GND)
(BATT)
(IGN)
(DIMMER)
(Vcc)
Load/Photo P.C.Board
PT304 PT360
8cm CD END DET.
PT360x3
PT301
PT302
PT303
CD IN/OUT DET.
8cm CD RELOAD DET.
12cm CD EJECT END DET.
IC301 LB1641
INPUT LOGIC BLOCK
PRE-DRIVER
LOADING MOTOR DRIVER
+5V REGULATOR
Q307 2SD1858
Q308 2SD1858
LOADING SW/ REGULATOR
Q306 DTA124
Q305 DTC124K
M301 LOADING MOTOR
Main-Front P.C.Board
LAMP REGULATOR
Q903 2SC2411K
Q901 2SA1036K
FL FILAMENT VOLTAGE CONT.
FL901
DOWN S911
1 MIX S912
2 REP S913
3 SCAN S914
PLY/PAU S915
EJECT S916
RESET S901
SDK S905
TU/BAND S904
DX S903
MONO S902
SEEK S910
6 S909
5 S908
4 S907
UP S906
REG (MICRO C

NOTES:

1. All resistance values are in ohms. K = 1,000

2.

A B C D E F G H


Q.R.B. P.C. Board
IC402 BA4560F
MUTING
ISOLATOR AMP
MUTE DRIVER
IC607 BA4560F
ALM GENERATOR
LAMP SW
REGULATOR (μCOM)
IC602 L78LR05DFA
IC601 15778W01 CPU
X601 4.19MHz
IC606 S-8052ALR RESET
REG (MICRO COMP)
CURRENT LIMITER/OUT REM.SW
INTERRUPT IN CIRCUIT
TO TUNER CIRCUIT
OUT PAUSE SW
DIMMER SW
INPUT REMOTE SW
INPUT PAUSE SW
CURRENT LIMITER /OUT REMOTE SW
STAND-BY DET.
FRONT-R
REAR-R
GND
FRONT-L
REAR-L
AUX-L
AUX-R
AUX-GND
ACC BATT IN-INT PWR-ANT OUT-PAUSE IN-PAUSE GND OUT-REM IN-REM DIMMER OUT-INT
CB901
CH901
LAMP REGULATOR
LOADING SW/ REGULATOR
LOADING MOTOR
FL901
IC901 MSC1149GS FL DRIVER
IC902 MSC1149GS FL DRIVER
FL FILAMENT VOLTAGE CONT.
Main-Front P.C.Board

▨ L-ch Signal Line

▨ R-ch Signal Line

	E	C	B		E	C	B
Q636	14.2V	14.1V	0V	Q629	0V	14V	0V
Q637	13.8V	PS	PS	Q630	0V	0V	4.3V
Q638	14V	13.1V	0V	Q633	5.7V	4.5V	5.7V
Q639	0V	0V	5V	PT301	0V	5V/0V	–
Q628	14V	0.3V	14V	PT302	0V	5V/0V	–
Q641	7.6V	7.4V	6.8V	PT303	0V	5V/0V	–
Q642	0V	0.2V	2.2V	PT304	0V	5V/0V	–
Q645	12.2V	13.3V	12.9V	Q305	0V	0V/13.9V	3.6V/0V
Q601	0V/0V	4.8V/0V	0V/8.1V	Q307	10.1V	14V	10.7V
Q605	0V	0V	3.8V	Q308	5.1V/0V	10.1V/0V	5.8V/0V
Q606	14V	14V	0V	Q401	0V	0V	0.2V
Q607	0V/0V	4.7V/0V	0V/14.4V	Q402	0V	0V	0.2V
Q608	0V/0V	4.7V/0V	0V/14.4V	Q404	0V	8.7V	0V
Q609	14.2V	14.2V	7.3V	Q901	0.7V	2V	1.4V
Q610	14V	14V	13.3V	Q903	6.1V	7.4V	6.7V
Q611	0V	0V	10V	Q204	14V	0V	3.4V
Q612	0V	0V	9.7V	Q205	0V	14V	0V
Q613	0V	0.1V	4.3V	Q206	0V	0V	0V
Q614	14V	14V	13.3V	Q406	0V	0V	3.5V
Q615	14V	14V	13.4V	Q306	14V/0.7V	10.7V/0V	0V/13.9V
Q616	0V	0V	4.5V	Q647	0V	0V/14.4V	0V/5V
Q617	5.1V	4.9V	0V	Q403	0V	0V	1V
Q618	0V	4V	0V	Q405	0V	0V	1V
Q619	7.6V	14V	8.2V	Q603	0V	14V	4.9V
Q621	0V	0V	3.9V	Q604	0V	14V	0V
Q922	5.1V	8.3V	5.7V	Q620	14V	0V	14V
Q623	0V	0.4V	3.3V	Q646	14V	14V	13.5V
Q625	14.1V	14.1V	13.4V				
Q627	10V	0.3V	10V				

IC602

1	14V
2	7.8V
3	0.6V
4	5.7V
5	5.7V

IC401

1	4.4V	6	8.7V	11	4.4V
2	4.4V	7	0V	12	0V
3	4.4V	8	4.4V	13	0V
4	4.4V	9	4.4V	14	8.7V
5	8.7V	10	4.4V		

IC301

1	0V
2	0V/6V
3	8V/0V
4	6V/0V
5	2V/0V
6	2V/0V
7	10V/0V
8	10V/0V
9	8V/0V
10	0V/6V

IC901

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30	PS		

IC607

1	4V
2	1V
3	4V
4	0V
5	3V
6	1V
7	4V
8	4.6V

IC402

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC902

1		16		31	PS
2		17		32	
3		18		33	
4		19		34	
5		20		35	
6		21		36	
7		22		37	
8		23		38	
9		24		39	
10		25	PS	40	
11		26	0V	41	
12		27	5.2V	42	
13		28		43	
14		29	12.2V	44	
15		30			

IC403

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.9V

IC606

1	5V/0V
2	5V
3	0V

IC404

1	4.4V
2	4.4V
3	4.4V
4	0V
5	4.4V
6	4.4V
7	4.4V
8	8.7V

IC605

1	PS
2	0V
3	PS
4	0V
5	1.3V
6	13.9V
7	13.9V
8	PS

IC601

1	0V/5V	23	2.2V/0V	45	PS
2	0V/5V	24	3.6V/0V	46	4.6V/0V
3	0V/5V	25	0V	47	0V/5V
4	0V/5V	26	0V	48	4.6V/0V
5	PS	27	0V	49	5V/0V
6	PS	28	0V	50	4.9V/0V
7	PS	29	3.6V/0V	51	PS
8	PS	30	3.6V/0V	52	PS
9	PS	31	0V/PS	53	PS
10	4.8V	32	0V/4.9V	54	4.9V/0V
11	0V/5V	33	0V/4.2V	55	4.5V/0V
12	4.8V/0V	34	PS	56	4.3V/0V
13	PS	35	4.9V	57	4.3V/0V
14	PS	36	4.9V/0V	58	4.9V
15	PS	37	0V/4.9V	59	4.9V
16	5V/0V	38	4.9V/0V	60	0V
17	0V/5V	39	4.8V/0V	61	0V/4.9V
18	0V/5V	40	4.8V/0V	62	–
19	0V/5V	41	5V/0V	63	–
20	0V/5V	42	0V/PS	64	–
21	3.9V/0V	43	5V/0V		
22	0V/5V	44	PS		

62,63,64
1/6 VDD,2/6 VDD,3/6 VDD,4/6 VDD,5/6 VDD ,VDD

<Measuring Conditions>

1. Power Supply:14V DC
2. Measuring Tool:Digital Multi Voltmeter.
3. Measuring Standard:Ground=0V
4. Unit Condition:Be Playing back the 2nd. Music of the test CD(YEDS-18).

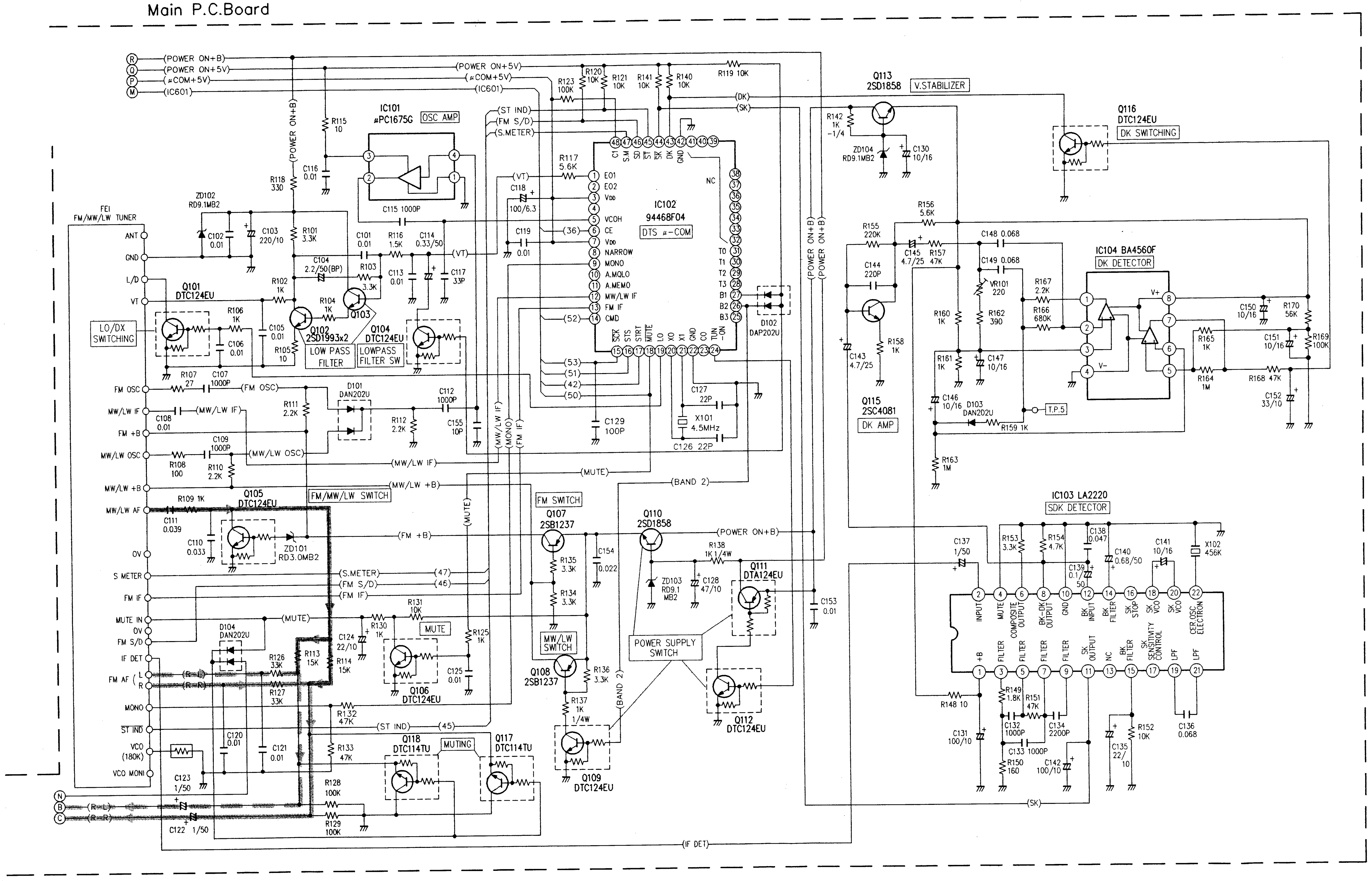
NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

Schematic Diagram (3/3)

IC	IC101 IC102 IC103 IC104
Transistor (Q)	Q101 Q105 Q102 Q103 Q106 Q118 Q104 Q117 Q107 Q108 Q109 Q110 Q111 Q112 Q113 Q115 Q116

Main P.C.Board



IC101 μPC1675G OSC AMP
IC102 94468F04 DTS μ-COM
IC103 LA2220 SDK DETECTOR
IC104 BA4560F DK DETECTOR
Q101 DTC124EU
Q102 2SD1993x2
Q103
Q104 DTC124EU
Q105 DTC124EU
Q106 DTC124EU
Q107 2SB1237
Q108 2SB1237
Q109 DTC124EU
Q110 2SD1858
Q111 DTA124EU
Q112 DTC124EU
Q113 2SD1858 V.STABILIZER
Q115 2SC4081 DK AMP
Q116 DTC124EU DK SWITCHING
Q117 DTC114TU
Q118 DTC114TU MUTING
LO/DX SWITCHING
LOW PASS FILTER
LOWPASS FILTER SW
FM/MW/LW SWITCH
FM SWITCH
MW/LW SWITCH
MUTE
POWER SUPPLY SWITCH
FEI FM/MW/LW TUNER
ANT
GND
L/D
VT
FM OSC
MW/LW IF
FM +B
MW/LW OSC
MW/LW +B
MW/LW AF
OV
S METER
FM IF
MUTE IN
FM S/D
IF DET
FM AF L R
MONO
ST IND
VCO (180K)
VCO MONI
(POWER ON+B)
(POWER ON+5V)
(μCOM+5V)
(IC601)
(ST IND)
(FM S/D)
(S.METER)
(DK)
(SK)
(MUTE)
(BAND 2)
(IF DET)
X101 4.5MHz
X102 456K
D101 DAN202U
D102 DAP202U
D103 DAN202U
D104 DAN202U
ZD101 RD3.0MB2
ZD102 RD9.1MB2
ZD103 RD9.1MB2
ZD104 RD9.1MB2
T.P.5

1
2
3
4
5

A B C D E F G H

IC101	
1	0V
2	3.7V
3	1.5V
4	1V

	E	C	B
Q101	0V	6.6V/0V	4.7V/0V
Q102	0.1V	1.1V~7.4V	0.7V
Q103	0.7V	9.4V	1.1V
Q104	0V	0V	0.8V
Q105	0V	0V	6.7V/0V
Q106	0V	0V/7.7V	0V/4.7V
Q107	8.8V	8.7V/0V	8.8V/8.1V
Q108	8.8V	8.8V/1.4V	8.6V/8.1V
Q109	0V	8.6V/0V	4.4V/1V
Q110	8.8V	14V	9.4V
Q111	0V/13V	13.9V/0V	0V/14V
Q112	0V	0V/13V	5.1V/0V
Q113	8.6V	13.7V	9.2V
Q115	1V	2.9V	1.6V
Q116	0V	3.3V	0.6V
Q117	4.1V	4.1V	4.9V
Q118	4.1V	4.1V	4.9V

IC102

1	1.2V	25	0V
2	0V	26	4.5V/1V
3	5V	27	1V/5V
4	0V	28	0V
5	2V	29	0V
6	5V/0V	30	0V
7	5V/0V	31	0V
8	5V/0V	32	0V
9	0V	33	0V
10	0V	34	5V/0V
11	0V	35	PS
12	0V/PS	36	PS
13	0V	37	PS
14	0V/PS	38	0V/PS
15	PS	39	0V
16	PS	40	0V
17	PS	41	0V
18	5V/0V	42	0V
19	0V/5V	43	
20	PS	44	
21	PS	45	4V/0V
22	0V	46	4V/0V
23	0V	47	0V
24	5V	48	5V

IC103

1	8.3V
2	2.1V
3	2.1V
4	0V
5	2.1V
6	1.4V
7	2.1V
8	2.6V
9	3V
10	0V
11	0.6V
12	2.9V
13	2.9V
14	2.9V
15	2.4V
16	0V
17	0V
18	3.1V
19	3V
20	3V
21	3V
22	4.1V

IC104

1	4.2V	5	5.2V
2	4.2V	6	5.2V
3	4.2V	7	1.3V
4	0V	8	8.6V

(Measuring Conditions)

1. Power Supply: 14V DC
2. Measuring Tool: Digital Multi Voltmeter.
3. Measuring Standard: Ground=0V
4. Unit Condition: Be playing back the 2nd. Music of the test CD(YEDS-18).

▬ MW/LW Signal Line
▬ ▬ L-ch Signal Line
▬ R-ch Signal Line

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.
uF=microfarads, pF=picofarads

Abbreviations

RES.=Resistor
C.F.=Carbon Film
M.F.=Metal Film
M.O.=Metal Oxide Film
M.P.=Metal Plate
TR.=Transistor
TRANS.=Transformer
CP.=Chip

CAP.=Capacitor
ELY.=Electrolytic
CER.=Ceramic
MYL.=Mylar
TAN.=Tantalum
POLY.=Polystyrol
PP.=Polypropylene
PLT.=Polyethylene

Symbol No.	Part No.	Description		
Main P. C. Board				
IC's				
IC101	51T96030F01	μ PC1675G		
IC102	51T94468F04	94468F04		
IC103	51T69141F01	LA2220		
IC104	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC201	51T15260W01	TC9200BF		
IC202	51T15261W01	TC9201BF		
IC203	51T84723F02	LC3516AML		
or	51T15420W01	TC5517FL		
or	51T90640F01	CXK5816M		
IC204	51T15266W01	LC7881MC		
IC205	51T15265W03	SM5807ES		
IC206	51T92693F01	BA10358F		
IC207	51T15262W01	TA8101F		
IC208	51T93333F01	NJM2904M		
IC209	51T93333F01	NJM2904M		
IC210	51T15264W01	TCA0372M		
IC211	51T15264W01	TCA0372M		
IC213	51T93532F01	TC4S69F		
IC214	51T16025W01	NJM2100M		
IC401	51T68999F03	BU4066BF		
IC402	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC403	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC404	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC406	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC407	51T15270W01	BU4052BF		
IC408	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC409	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC410	51T93532F01	TC4S69F		
IC601	51T15778W01	15778W01		
or	51T15263W01	15263W01		
IC602	51T15268W03	L78LR05FA		
IC603	51T90890F01	M5236ML		
IC604	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC605	51T15510W01	MC34063M		
IC606	51T92166F01	S-8052ALR		
IC607	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
Transistors				
Q101	48T94606F03	CP., DTC124EU		
Q102	48T90181F05	2SD1993		
Q103	48T90181F05	2SD1993		
Q104	48T94606F03	CP., DTC124EU		
Q105	48T94606F03	CP., DTC124EU		
Q106	48T94606F03	CP., DTC124EU		
Q107	48T83417F03	2SB1237		
Q108	48T83417F03	2SB1237		
Q109	48T94606F03	CP., DTC124EU		
Q110	48T83415F03	2SD1858		
Q111	48T94606F53	CP., DTA124EU		
Q112	48T94606F03	CP., DTC124EU		
Q113	48T83415F03	2SD1858		
Q115	48T94582F01	CP., 2SC4081		
Q116	48T94606F03	CP., DTC124EU		
Q117	48T94606F05	CP., DTC114TU		
Q118	48T94606F05	CP., DTC114TU		
Q201	48T83417F03	2SB1237		
Q202	48T94606F53	CP., DTA124EU		
Q203	48T94606F01	CP., DTC144EU		
Q204	48T15287W03	2SB1326Q		
Q205	48T94606F03	CP., DTC124EU		
Q206	48T81552F01	CP., 2SD1383K		
Q207	48T80614F01	CP., 2SD1664		
Q208	48T94582F01	CP., 2SC4081		
Q209	48T80611F01	CP., 2SB1132		
Q210	48T94606F03	CP., DTC124EU		
Q211	48T94606F53	CP., DTA124EU		
Q401	48T62967F33	CP., DTC343T		
Q402	48T62967F33	CP., DTC343T		
Q403	48T63788F01	CP., 2SD1328		
Q404	48T94606F03	CP., DTC124EU		
Q405	48T63788F01	CP., 2SD1328		
Q406	48T94606F03	CP., DTC124EU		
Q407	48T94606F01	CP., DTC144EU		

Symbol No.	Part No.	Description		
Q408	48T94606F01	CP., DTC144EU		
Q601	48T94606F03	CP., DTC124EU		
Q603	48T94606F03	CP., DTC124EU		
Q604	48T94606F03	CP., DTC124EU		
Q605	48T94606F03	CP., DTC124EU		
Q606	48T94606F53	CP., DTA124EU		
Q607	48T94606F03	CP., DTC124EU		
Q608	48T94606F03	CP., DTC124EU		
Q609	48T94606F55	CP., DTA114TU		
Q610	48T94581F01	CP., 2SA1576		
Q611	48T94606F03	CP., DTC124EU		
Q612	48T94606F03	CP., DTC124EU		
Q613	48T94606F03	CP., DTC124EU		
Q614	48T80611F01	CP., 2SB1132		
Q615	48T80611F01	CP., 2SB1132		
Q616	48T94606F03	CP., DTC124EU		
Q617	48T94606F56	CP., DTA114EU		
Q618	48T94606F03	CP., DTC124EU		
Q619	48T15289W03	2SD2008Q		
Q620	48T94606F53	CP., DTA124EU		
Q621	48T94606F03	CP., DTC124EU		
Q622	48T15289W03	2SD2008Q		
Q623	48T94606F03	CP., DTC124EU		
Q625	48T15701W02	2SB1360E		
Q626	48T83417F03	2SB1237		
Q627	48T63420F01	CP., 2SA1037K		
Q628	48T94606F53	CP., DTA124EU		
Q629	48T94606F03	CP., DTC124EU		
Q630	48T94606F03	CP., DTC124EU		
Q631	48T94582F01	CP., 2SC4081		
Q632	48T94606F53	CP., DTA124EU		
Q633	48T94606F53	CP., DTA124EU		
Q634	48T94606F03	CP., DTC124EU		
Q635	48T94606F03	CP., DTC124EU		
Q636	48T94606F53	CP., DTA124EU		
Q637	48T15511W02	CP., 2SB1261		
Q638	48T94606F56	CP., DTA114EU		
Q639	48T94606F03	CP., DTC124EU		
Q641	48T63419F01	CP., 2SA1036K		
Q642	48T94606F03	CP., DTC124EU		
Q645	48T94582F01	CP., 2SC4081		
Q646	48T80614F01	2SD1664		
Diodes				
D101	48T94608F03	CP., DAN202U		
D102	48T94608F02	CP., DAP202U		
D103	48T94608F03	CP., DAN202U		
D104	48T94608F03	CP., DAN202U		
D201	48T94608F03	CP., DAN202U		

Symbol No.	Part No.	Description		
D202	48T94608F03	CP., DAN202U		
D203	48T94608F03	CP., DAN202U		
D204	48T15512W01	CP., DSM10		
D205	48T94608F03	CP., DAN202U		
D206	48T94608F03	CP., DAN202U		
D601	48T94608F03	CP., DAN202U		
D602	48T15290W01	DAN213		
D604	48T94608F01	CP., DA204U		
D605	48C40235G02	10E2		
D606	48T94608F03	CP., DAN202U		
D607	48T94608F02	CP., DAP202U		
D608	48T94608F03	CP., DAN202U		
D611	48T94608F03	CP., DAN202U		
D612	48T94608F03	CP., DAN202U		
D613	48T15702W01	CP., SB05-05CP		
D614	48T94608F03	CP., DAN202U		
D615	48T94608F01	CP., DA204U		
D616	48T94608F03	CP., DAN202U		
D617	48T94608F03	CP., DAN202U		
D618	48T94608F03	CP., DAN202U		
D619	48T94608F03	CP., DAN202U		
D620	48T94608F03	CP., DAN202U		
D622	48C40235G02	10E2		
D624	48T15512W01	CP., DSM10		
D625	48T15512W01	CP., DSM10		
D626	48T94608F01	CP., DA204U		
ZD101	48T62934F05	Zener, CP., RD3.0MB2		
ZD102	48T62934F37	Zener, CP., RD9.1MB2		
ZD103	48T62934F37	Zener, CP., RD9.1MB2		
ZD104	48T62934F37	Zener, CP., RD9.1MB2		
ZD201	48T62934F01	Zener, CP., RD2.4MB1		
ZD601	48T62934F30	Zener, CP., RD7.5MB1		
ZD602	48T62934F19	Zener, CP., RD5.1MB2		
ZD603	48T62934F29	Zener, CP., RD6.8MB3		
ZD604	48T62934F33	Zener, CP., RD8.2MB1		
ZD605	48T62934F22	Zener, CP., RD5.6MB2		
ZD606	48T62934F40	Zener, CP., RD10MB2		
ZD607	48T62934F22	Zener, CP., RD5.6MB2		
ZD608	48T62934F49	Zener, CP., RD13MB2		
ZD609	48T62934F64	Zener, CP., RD22MB2		

Symbol No.	Part No.	Description		
Thermistor/Coils/Crystals/Filter				
TH201	48T93439F06	Thermistor, 100k ohm		
L601	25C40894G01	Coil, Choke, 1.2mH		
L602	24T71179F05	Coil, Inductor, 220 μH		
L603	24T16271W13	Coil, 220 μH		
X101	48T82502F02	Crystal 4.5MHz		
X201	48T84727F03	Crystal 16.9344MHz		
X601	91T15285W01	CER., LOCK 4.19MHz		
X102	91T69142F01	CER., LOCK, 456kHz		
Capacitors				
C101	08S65128F69	CP., 0.01 μF		
C102	08S65128F69	CP., 0.01 μF		
C103	23T16086W01	ELY., 220 μF/10V		
C104	23T82372F19	ELY., (BP) 2.2 μF/50V		
C105	08S65128F69	CP., 0.01 μF		
C106	08S65128F69	CP., 0.01 μF		
C107	08S65128F57	CP., 1000pF		
C108	08S65128F69	CP., 0.01 μF		
C109	08S65128F57	CP., 1000pF		
C110	08T15399W02	CP., 0.033 μF		
C111	08T90316F24	TF, 0.039 μF		
C112	08S65128F57	CP., 1000pF		
C113	08S65128F69	CP., 0.01 μF		
C114	23S61523F27	ELY., 0.33 μF/50V		
C115	08S65128F57	CP., 1000pF		
C116	08S65128F69	CP., 0.01 μF		
C117	08S65128F23	CP., 33pF		
C118	23S61523F08	ELY., 100 μF/6.3V		
C119	08S65128F69	CP., 0.01 μF		
C120	08S65128F69	CP., 0.01 μF		
C121	08S65128F69	CP., 0.01 μF		
C122	23S61523F29	ELY., 1 μF/50V		
C123	23S61523F29	ELY., 1 μF/50V		
C124	23S61523F09	ELY., 22 μF/10V		
C125	08S65128F69	CP., 0.01 μF		
C126	08S82122F21	CP., 22pF		
C127	08S82122F21	CP., 22pF		
C128	23S61523F11	ELY., 47 μF/10V		
C129	08S65128F35	CP., 100pF		
C130	23S61523F12	ELY., 10 μF/16V		
C131	23S61523F34	ELY., 100 μF/10V		
C132	08S72783F35	CP., 1000pF		
C133	08S72783F35	CP., 1000pF		
C134	08T90316F09	TF, 2200pF		
C135	23S61523F09	ELY., 22 μF/10V		

Symbol No.	Part No.	Description		
C136	08T90316F27	TF, 0.068 μF		
C137	23S61523F29	ELY., 1 μF/50V		
C138	08S65128F74	CP., 0.047 μF		
C139	23S61523F25	ELY., 0.1 μF/50V		
C140	23S61523F35	ELY., 0.68 μF/50V		
C141	23S61523F12	ELY., 10 μF/16V		
C142	23S61523F34	ELY., 100 μF/10V		
C143	23S61523F17	ELY., 4.7 μF/25V		
C144	08S65128F43	CP., 220pF		
C145	23S61523F17	ELY., 4.7 μF/25V		
C146	23S61523F12	ELY., 10 μF/16V		
C147	23S61523F12	ELY., 10 μF/16V		
C148	08T90316F27	TF, 0.068 μF		
C149	08T90316F27	TF, 0.068 μF		
C150	23S61523F12	ELY., 10 μF/16V		
C151	23S61523F12	ELY., 10 μF/16V		
C152	23S61523F10	ELY., 33 μF/10V		
C153	08S65128F69	CP., 0.01 μF		
C154	08S65128F72	CP., 0.022 μF		
C155	08S65128F12	CP., 10pF		
C201	23T74437F29	TAN., 3.3 μF/16V		
C202	23S61524F08	ELY., 100 μF/6.3V		
C203	08S65128F72	CP., 0.022 μF		
C204	23S61524F13	ELY., 10 μF/16V		
C205	23T74437F32	TAN., 10 μF/16V		
C206	23T74437F32	TAN., 10 μF/16V		
C207	08S65128F23	CP., 33pF		
C208	08S65128F23	CP., 33pF		
C209	08S65128F04	CP., 2pF		
C210	08S65128F69	CP., 0.01 μF		
C211	23T15412W13	ELY., 10 μF/16V		
C212	08S65128F31	CP., 68pF		
C213	08S65128F31	CP., 68pF		
C214	08S65128F51	CP., 470pF		
C215	23S61524F05	ELY., 22 μF/6.3V		
C216	08T15399W03	CP., 0.047 μF		
C217	08T15399W02	CP., 0.033 μF		
C218	08S65128F27	CP., 47pF		
C219	08S65128F27	CP., 47pF		
C220	08S65128F27	CP., 47pF		
C221	08S65128F69	CP., 0.01 μF		
C222	08S65128F60	CP., 1800pF		
C223	08S65128F69	CP., 0.01 μF		
C224	23S61523F12	ELY., 10 μF/16V		
C225	08S65128F76	CP., 0.1 μF		
C226	23T74181F38	TAN., 10 μF/10V		
C227	08S65128F69	CP., 0.01 μF		
C228	08S65128F21	CP., 27pF		
C229	08S82122F13	CP., 10pF		
C230	08S82122F13	CP., 10pF		

Symbol No.	Part No.	Description			
C232	08S65128F69	CP.,	0.01 μF		
C234	08S65128F19	CP.,	22pF		
C235	08T15399W02	CP.,	0.033 μF		
C236	08S65128F65	CP.,	4700pF		
C238	08S65128F47	CP.,	330pF		
C239	23S61524F31	ELY.,	0.47 μF/50V		
C240	08S65128F67	CP.,	6800pF		
C241	08S65128F62	CP.,	2700pF		
C242	08S65128F69	CP.,	0.01 μF		
C243	08T15807W05	CP.,	0.1 μF		
C244	23S61523F17	ELY.,	4.7 μF/25V		
C245	23T74181F38	TAN.,	10 μF/10V		
C246	23S61524F13	ELY.,	10 μF/16V		
C247	08S65128F74	CP.,	0.047 μF		
C248	23S61523F12	ELY.,	10 μF/16V		
C249	08S65128F74	CP.,	0.047 μF		
C250	08S65128F76	CP.,	0.1 μF		
C251	08S65128F74	CP.,	0.047 μF		
C252	23S61524F13	ELY.,	10 μF/16V		
C254	23S61524F13	ELY.,	10 μF/16V		
C255	23T74181F38	TAN.,	10 μF/10V		
C256	23S61524F13	ELY.,	10 μF/16V		
C257	23S61523F29	ELY.,	1 μF/50V		
C258	08S65128F29	CP.,	56pF		
C259	08S53332F35	CP.,	1000pF		
C260	08S65128F12	CP.,	10pF		
C401	23S61524F13	ELY.,	10 μF/16V		
C402	23S61524F13	ELY.,	10 μF/16V		
C403	23S61523F12	ELY.,	10 μF/16V		
C404	23S61523F12	ELY.,	10 μF/16V		
C405	23S61523F12	ELY.,	10 μF/16V		
C406	23S61524F13	ELY.,	10 μF/16V		
C409	08S82122F21	CP.,	22pF		
C410	08S82122F21	CP.,	22pF		
C415	08S82122F37	CP.,	100pF		
C416	08S82122F37	CP.,	100pF		
C417	08S82122F21	CP.,	22pF		
C418	08S82122F21	CP.,	22pF		
C419	08T90316F17	TF,	0.01 μF		
C420	08T90316F17	TF,	0.01 μF		
C421	08S72783F38	CP.,	1800pF		
C422	08S72783F38	CP.,	1800pF		
C423	08S82122F34	CP.,	75pF		
C424	08S82122F34	CP.,	75pF		
C425	08S72783F37	CP.,	1500pF		
C426	08S72783F37	CP.,	1500pF		
C427	08T90316F21	TF,	0.022 μF		
C428	08T90316F21	TF,	0.022 μF		
C429	23S61523F12	ELY.,	10 μF/16V		
C430	23S61523F12	ELY.,	10 μF/16V		

Symbol No.	Part No.	Description			
C431	23S61523F12	ELY.,	10 μF/16V		
C432	23S61523F12	ELY.,	10 μF/16V		
C433	23S61523F12	ELY.,	10 μF/16V		
C434	08S65128F43	CP.,	220pF		
C435	08S65128F43	CP.,	220pF		
C601	23S61524F13	ELY.,	10 μF/16V		
C602	23S82482F02	ELY.,	100 μF/16V		
C604	23S61524F29	ELY.,	0.22 μF/50V		
C605	23S61523F12	ELY.,	10 μF/16V		
C606	23S61523F26	ELY.,	0.22 μF/50V		
C607	08S53332F57	CP.,	0.1 μF		
C609	23T16086W02	ELY.,	330 μF/6.3V		
C610	23S61524F13	ELY.,	10 μF/16V		
C612	23S61524F13	ELY.,	10 μF/16V		
C613	23S40657F63	ELY.,	1000 μF/16V		
C614	08S65128F76	CP.,	0.1 μF		
C615	23S82482F02	ELY.,	100 μF/16V		
C617	23S61523F12	ELY.,	10 μF/16V		
C618	23S61524F13	ELY.,	10 μF/16V		
C619	23S61524F33	ELY.,	2.2 μF/50V		
C620	23T15412W13	ELY.,	10 μF/16V		
C621	08S53332F57	CP.,	0.1 μF		
C622	23S61523F12	ELY.,	10 μF/16V		
C625	08S65128F69	CP.,	0.01 μF		
C628	08S65128F37	CP.,	120pF		
C629	23T16314W01	ELY.,	470 μF/10V		
C630	23T15412W13	ELY.,	10 μF/16V		
C631	08S65128F76	CP.,	0.1 μF		
C632	08S65128F76	CP.,	0.1 μF		
C633	23T15412W13	ELY.,	10 μF/16V		
C634	23S61524F16	ELY.,	47 μF/16V		
C635	23S61523F29	ELY.,	1 μF/50V		
C636	23S61524F13	ELY.,	10 μF/16V		
C637	23S61523F29	ELY.,	1 μF/50V		
C638	08S65128F69	CP.,	0.01 μF		
C639	23S61523F12	ELY.,	10 μF/16V		
C640	08S65128F69	CP.,	0.01 μF		
C641	08T15399W02	CP.,	0.033 μF		

Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)

R101	06S64995F65	3.3k ohm		
R102	06S64995F53	1k ohm		
R103	06S64995F65	3.3k ohm		
R104	06S64995F53	1k ohm		
R105	06S64995F05	10 ohm		
R106	06S64995F53	1k ohm		
R107	06S64995F15	27 ohm		
R108	06S64995F29	100 ohm		
R109	06S64995F53	1k ohm		
R110	06S64995F61	2.2k ohm		

Symbol No.	Part No.	Description		
R111	06S64995F61	2.2k ohm		
R112	06S64995F61	2.2k ohm		
R113	06S64995F81	15k ohm		
R114	06S64995F81	15k ohm		
R115	06S64995F05	10 ohm		
R116	06S64995F57	1.5k ohm		
R117	06S64995F71	5.6k ohm		
R118	06T70072F41	330 ohm 1/4W		
R119	06S64995F77	10k ohm		
R120	06S64995F77	10k ohm		
R121	06S64995F77	10k ohm		
R123	06S64996F02	100k ohm		
R125	06S64995F53	1k ohm		
R126	06S64995F89	33k ohm		
R127	06S64995F89	33k ohm		
R128	06S64996F02	100k ohm		
R129	06S64996F02	100k ohm		
R130	06S64995F53	1k ohm		
R131	06S64995F77	10k ohm		
R132	06S64995F93	47k ohm		
R133	06S64995F93	47k ohm		
R134	06S64995F65	3.3k ohm		
R135	06S64995F65	3.3k ohm		
R136	06S64995F65	3.3k ohm		
R137	06T70072F53	1k ohm 1/4W		
R138	06T70072F53	1k ohm 1/4W		
R140	06S64995F77	10k ohm		
R141	06S64995F77	10k ohm		
R142	06T70072F53	1k ohm 1/4W		
R148	06S64995F05	10 ohm		
R149	06S64995F59	1.8k ohm		
R150	06S64995F34	160 ohm		
R151	06S64995F93	47k ohm		
R152	06S64995F77	10k ohm		
R153	06S64995F65	3.3k ohm		
R154	06S64995F69	4.7k ohm		
R155	06S64996F10	220k ohm		
R156	06S64995F71	5.6k ohm		
R157	06S64995F93	47k ohm		
R158	06S64995F53	1k ohm		
R159	06S64995F53	1k ohm		
R160	06S64995F53	1k ohm		
R161	06S64995F53	1k ohm		
R162	06S64995F43	390 ohm		
R163	06S64996F26	1M ohm		
R164	06S64996F26	1M ohm		
R165	06S64995F53	1k ohm		
R166	06S64996F22	680k ohm		
R167	06S64995F61	2.2k ohm		
R168	06S64995F93	47k ohm		

Symbol No.	Part No.	Description		
R169	06S64996F02	100k ohm		
R170	06S64995F95	56k ohm		
R201	06T70072F05	10 ohm 1/4W		
R202	06S64995F53	1k ohm		
R203	06S64996F26	1M ohm		
R204	06S64995F83	18k ohm		
R205	06S64995F77	10k ohm		
R206	06S64995F55	1.2k ohm		
R207	06S64995F79	12k ohm		
R208	06S64995F93	47k ohm		
R209	06S64995F41	330 ohm		
R210	06S64996F16	390k ohm		
R211	06S64996F14	330k ohm		
R212	06S64995F99	82k ohm		
R213	06S64995F81	15k ohm		
R214	06S64995F53	1k ohm		
R215	06S64995F99	82k ohm		
R216	06S64995F99	82k ohm		
R217	06S64995F73	6.8k ohm		
R218	06S64996F11	240k ohm		
R219	06S64995F87	27k ohm		
R220	06S64995F74	7.5k ohm		
R221	06S64995F83	18k ohm		
R222	06S64995F79	12k ohm		
R223	06S64995F53	1k ohm		
R224	06S64995F85	22k ohm		
R225	06S64995F79	12k ohm		
R226	06S64995F73	6.8k ohm		
R227	06S64995F75	8.2k ohm		
R228	06S64995F75	8.2k ohm		
R229	06S64995F77	10k ohm		
R230	06S64995F85	22k ohm		
R231	06S64996F26	1M ohm		
R232	06S64995F91	39k ohm		
R233	06S64995F74	7.5k ohm		
R234	06S64995F75	8.2k ohm		
R235	06S64995F67	3.9k ohm		
R236	06S64995F61	2.2k ohm		
R237	06S64995F77	10k ohm		
R239	06S64995F73	6.8k ohm		
R240	06S64995F57	1.5k ohm		
R241	06S64996F02	100k ohm		
R242	06S64996F10	220k ohm		
R243	06S64995F85	22k ohm		
R244	06S64995F77	10k ohm		
R245	06S64996F26	1M ohm		
R246	06S64995F97	68k ohm		
R248	06S64995F97	68k ohm		
R249	06S64995F93	47k ohm		
R251	06S64995F75	8.2k ohm		

Symbol No.	Part No.	Description		
R252	06S64995F89	33k ohm		
R254	06S64995F61	2.2k ohm		
R255	06S64995F83	18k ohm		
R256	06S64996F02	100k ohm		
R257	06S64995F73	6.8k ohm		
R258	06S64995F86	24k ohm		
R259	06S64996F14	330k ohm		
R260	06S64996F02	100k ohm		
R261	06S64996F10	220k ohm		
R262	06S64995F85	22k ohm		
R263	06S64995F91	39k ohm		
R264	06S64995F93	47k ohm		
R265	06S64995F77	10k ohm		
R266	06S64995F85	22k ohm		
R267	06S64995F85	22k ohm		
R268	06S64995F85	22k ohm		
R269	06S64995F85	22k ohm		
R270	06S64995F85	22k ohm		
R271	06S64995F77	10k ohm		
R272	06S64995F77	10k ohm		
R273	06S64995F05	10 ohm		
R274	06S64995F77	10k ohm		
R275	06T70072F53	1k ohm 1/4W		
R276	06S64995F77	10k ohm		
R277	06S64996F18	470k ohm		
R278	06S64995F05	10 ohm		
R279	06S64995F85	22k ohm		
R280	06S64995F85	22k ohm		
R282	06S64995F85	22k ohm		
R283	06S64995F85	22k ohm		
R284	06S64995F13	22 ohm		
R285	06S64995F77	10k ohm		
R286	06S64995F53	1k ohm		
R287	06S64995F77	10k ohm		
R288	06S64995F69	4.7k ohm		
R289	06S64995F69	4.7k ohm		
R290	06S64995F69	4.7k ohm		
R291	06S64996F32	3.3M ohm		
R292	06S64996F26	1M ohm		
R293	06S64995F77	10k ohm		
R294	06S64996F20	560k ohm		
R295	06S64995F53	1k ohm		
R296	06S64996F18	470k ohm		
R297	06S64996F02	100k ohm		
R298	06S64995F85	22k ohm		
R320	06S64995F79	12k ohm		
R321	06S64995F77	10k ohm		
R401	06S64995F53	1k ohm		
R402	06S64995F53	1k ohm		
R403	06S64995F53	1k ohm		

Symbol No.	Part No.	Description		
R404	06S64995F53	1k ohm		
R405	06S64995F37	220 ohm		
R406	06S64995F37	220 ohm		
R407	06S64995F77	10k ohm		
R408	06S64995F77	10k ohm		
R409	06S64995F77	10k ohm		
R410	06S64995F77	10k ohm		
R411	06S64995F77	10k ohm		
R412	06S64995F77	10k ohm		
R413	06S64995F77	10k ohm		
R414	06S64995F77	10k ohm		
R415	06S64995F87	27k ohm		
R416	06S64995F87	27k ohm		
R417	06S64995F77	10k ohm		
R418	06S64995F77	10k ohm		
R419	06S64995F77	10k ohm		
R420	06S64995F77	10k ohm		
R421	06S64995F77	10k ohm		
R422	06S64995F77	10k ohm		
R423	06T70072F61	2.2k ohm 1/4W		
R424	06S64995F85	22k ohm		
R425	06T70072F61	2.2k ohm 1/4W		
R426	06S64995F61	2.2k ohm		
R427	06S64995F83	18k ohm		
R428	06S64995F83	18k ohm		
R429	06S64995F77	10k ohm		
R430	06S64995F77	10k ohm		
R431	06S64995F77	10k ohm		
R432	06S64995F77	10k ohm		
R433	06S64996F26	1M ohm		
R434	06S64996F26	1M ohm		
R435	06S64995F53	1k ohm		
R436	06S64995F53	1k ohm		
R437	06S64995F53	1k ohm		
R438	06S64995F53	1k ohm		
R439	06S64995F77	10k ohm		
R440	06S64995F77	10k ohm		
R441	06S64996F04	120k ohm		
R442	06S64996F04	120k ohm		
R443	06S64995F90	36k ohm		
R444	06S64995F90	36k ohm		
R445	06S64996F02	100k ohm		
R446	06S64996F02	100k ohm		
R447	06S64995F85	22k ohm		
R448	06S64995F85	22k ohm		
R449	06S64995F85	22k ohm		
R450	06S64995F85	22k ohm		
R451	06S64996F02	100k ohm		
R452	06S64996F02	100k ohm		
R453	06S64995F57	1.5k ohm		

Symbol No.	Part No.	Description		
R454	06S64995F57	1.5k ohm		
R455	06S64996F18	470k ohm		
R456	06S64996F18	470k ohm		
R457	06S64995F66	3.6k ohm		
R458	06S64995F66	3.6k ohm		
R459	06S64995F70	5.1k ohm		
R460	06S64995F70	5.1k ohm		
R461	06S64995F93	47k ohm		
R462	06S64995F93	47k ohm		
R463	06S64995F70	5.1k ohm		
R464	06S64995F70	5.1k ohm		
R465	06S64996F34	4.7M ohm		
R466	06S64996F34	4.7M ohm		
R467	06S64995F73	6.8k ohm		
R468	06S64995F85	22k ohm		
R470	06S64995F85	22k ohm		
R471	06S64995F85	22k ohm		
R472	06S64995F19	39 ohm		
R473	06S64996F02	100k ohm		
R601	06S64995F77	10k ohm		
R602	06T70072F61	2.2k ohm 1/4W		
R604	06T70072F53	1k ohm 1/4W		
R605	06T70072F53	1k ohm 1/4W		
R606	06S64995F05	10 ohm		
R607	06T70072F65	3.3k ohm 1/4W		
R608	06S64995F69	4.7k ohm		
R609	06S64995F85	22k ohm		
R610	06S64995F69	4.7k ohm		
R611	06S64995F85	22k ohm		
R612	06T70072F78	2.2 ohm 1/4W		
R613	06S64995F85	22k ohm		
R614	06S64995F61	2.2k ohm		
R615	06S64995F77	10k ohm		
R616	06S64995F77	10k ohm		
R617	06S64995F77	10k ohm		
R618	06S64995F69	4.7k ohm		
R619	06S64995F53	1k ohm		
R620	06S64995F77	10k ohm		
R621	06T70072F53	1k ohm 1/4W		
R622	06S64995F99	82k ohm		
R624	06S64995F45	470 ohm		
R625	06S64995F77	10k ohm		
R626	06T70072F53	1k ohm 1/4W		
R627	06T70072F37	220 ohm 1/4W		
R628	06S64995F81	15k ohm		
R629	06S64995F70	5.1k ohm		
R630	06S64995F87	27k ohm		
R631	06S64995F78	11k ohm		
R632	06S64995F77	10k ohm		
R633	06T70072F45	470 ohm 1/4W		

Symbol No.	Part No.	Description		
R634	06S64995F77	10k ohm		
R635	06S64995F61	2.2k ohm		
R636	06S64996F10	220k ohm		
R637	06S64995F77	10k ohm		
R638	06S64995F77	10k ohm		
R639	06S64996F02	100k ohm		
R640	06S64996F02	100k ohm		
R641	06S64996F02	100k ohm		
R642	06S64996F02	100k ohm		
R643	06S64996F02	100k ohm		
R646	06S64996F02	100k ohm		
R647	06S64995F93	47k ohm		
R648	06S64995F77	10k ohm		
R649	06S64995F77	10k ohm		
R650	06S64995F77	10k ohm		
R651	06S64995F63	2.7k ohm		
R652	06S64996F02	100k ohm		
R653	06S64996F02	100k ohm		
R654	06S64995F81	15k ohm		
R655	06T70072F29	100 ohm 1/4W		
R656	06T70072F47	560 ohm 1/4W		
R657	06S64996F02	100k ohm		
R658	06S64995F77	10k ohm		
R659	06T70072F53	1k ohm 1/4W		
R660	06S64996F02	100k ohm		
R661	06S64995F77	10k ohm		
R662	06S64995F77	10k ohm		
R663	06S64995F77	10k ohm		
R665	06S64995F85	22k ohm		
R666	06T70072F53	1k ohm 1/4W		
R668	06T70072F47	560 ohm 1/4W		
R669	06S64995F69	4.7k ohm		
R670	06S64995F53	1k ohm		
R671	06S64995F61	2.2k ohm		
R672	06S64995F85	22k ohm		
R673	06S64995F53	1k ohm		
R674	06S64995F45	470 ohm		
R680	06S64995F65	3.3k ohm		
R681	06S64996F03	110k ohm		
R682	06S64996F04	120k ohm		
R683	06S64996F02	100k ohm		
R684	06S64995F91	39k ohm		
R685	06S64995F93	47k ohm		
R686	06S64995F93	47k ohm		
R688	06S53330F77	10k ohm 1/8W		
R689	06T70072F45	470 ohm 1/4W		
VR101	18T10024W03	Variable, 220 ohm		
VR201	18T15805W19	Variable, 100k ohm		
VR406	18T25095W01	Variable, 220 ohm		

Symbol No.	Part No.	Description		
VR401-1 VR401-2 VR401-3 VR401-4 VR401-5 VR401-6 S801 S905	18T15283W01	Volume, Rotary (VOLUME/BAL/ FAD) (POWER) (SDK)		

Load/Photo P. C. Board

IC/Transistors

Symbol No.	Part No.	Description		
IC301	51T15267W01	IC, LB1641		
Q305	48T62967F03	CP., DTC124K		
Q306	48T62966F03	CP., DTA124		
Q307	48T83415F03	2SD1858		
Q308	48T83415F03	2SD1858		
PT301	48T92913F01	PHOTO, PT360		
PT302	48T92913F01	PHOTO, PT360		
PT303	48T92913F01	PHOTO, PT360		

LEDs/Diodes

Symbol No.	Part No.	Description		
LD301	48T16057W02	LED, AN 501-B1 (RED)		
LD302	48T16057W02	LED, AN 501-B1 (RED)		
LD303	48T16057W02	LED, AN 501-B1 (RED)		
ZD301	48T15440W12	Zener, UTZJ6.2C		
ZD302	48T15440W08	Zener, UTZJ5.6B		
ZD303	48T15440W28	Zener, UTZJ11A		

Capacitors

Symbol No.	Part No.	Description		
C301	08S65128F69	CP., 0.01 μ F		
C302	08S65128F69	CP., 0.01 μ F		
C303	23T74437F32	TAN., 10 μ F/16V		
C304	23S61523F12	ELY., 10 μ F/16V		

Resistors (All resistors are chip 1/8W±5% unless otherwise noted.)

Symbol No.	Part No.	Description		
R301	06S53330F47	560 ohm		
R302	06S53330F47	560 ohm		
R303	06S53330F47	560 ohm		
R304	06S53331F02	100k ohm		
R305	06S53331F02	100k ohm		
R306	06S53331F02	100k ohm		
R307	06T70072F45	470 ohm 1/4W		
R309	06C43205J38	Metal Film, 10 ohm 1/2W		
R310	06S53330F47	560 ohm		
R311	06S53331F02	100k ohm		
R312	06T70072F53	1k ohm 1/4W		

Main-Front P. C. Board

IC's

Symbol No.	Part No.	Description		
IC405	51T92001F01	BA4560F		
or	51T93338F01	NJM4560E		
IC901	51T15269W02	MSC1149GS		
IC902	51T15269W02	MSC1149GS		

Transistors

Symbol No.	Part No.	Description		
Q901	48T63419F01	CP., 2SA1036K		
Q903	48T63461F01	CP., 2SC2411K		

Diodes/LED

Symbol No.	Part No.	Description		
D901	48T94608F01	CP., DA204U		
ZD901	48T62934F27	Zener, CP., RD6.8MB1		
LD902	48T42449F12	LED, BG5535K (GRN)		

Switches

Symbol No.	Part No.	Description		
S901	40T66861F03	Tact, SKHHAQ (RESET)		
S902	40T66861F03	Tact, SKHHAQ (MONO)		
S903	40T66861F03	Tact, SKHHAQ (DX)		
S904	40T66861F03	Tact, SKHHAQ (TU/BAND)		
S906	40T66861F03	Tact, SKHHAQ (UP)		
S907	40T66861F03	Tact, SKHHAQ (4)		
S908	40T66861F03	Tact, SKHHAQ (5)		
S909	40T66861F03	Tact, SKHHAQ (6)		
S910	40T10876W12	Tact, SKHLAJ (SEEK)		
S911	40T66861F03	Tact, SKHHAQ (DOWN)		

Symbol No.	Part No.	Description		
S912	40T66861F03	Tact, SKHHAQ (1/MIX)		
S913	40T66861F03	Tact, SKHHAQ (2/REP)		
S914	40T66861F03	Tact, SKHHAQ (3/SCAN)		
S915	40T66861F03	Tact, SKHHAQ (PLAY/PAUSE)		
S916	40T66861F03	Tact, SKHHAQ (EJECT)		
Lamps				
PL901	65T95274F02	Pilot, 6V−70mA		
PL902	65T95274F02	Pilot, 6V−70mA		
PL903	65T67467F03	Pilot, 6V−32mA		
PL904	65T95274F02	Pilot, 6V−70mA		
Capacitors				
C408	23S61523F12	ELY., 10 μ F/16V		
C411	08T90316F22	TF, 0.027 μ F		
C412	08T90316F22	TF, 0.027 μ F		
C413	08T90316F15	TF, 6800pF		
C414	08T90316F15	TF, 6800pF		
Resistors (All resistors are chip 1/16W±5% unless otherwise noted.)				
R901	06S64995F77	10k ohm		
R902	06S64995F65	3.3k ohm		
R903	06T70072F05	10 ohm 1/4W		
R905	06S64995F70	5.1k ohm		
R906	06S64995F64	3k ohm		
R907	06S64995F60	2k ohm		
R908	06S64995F91	39k ohm		
R909	06S64995F70	5.1k ohm		
R910	06S64995F64	3k ohm		
R911	06S64995F60	2k ohm		
R912	06S64995F88	30k ohm		
R913	06S64995F77	10k ohm		
R914	06S64995F70	5.1k ohm		
R915	06S64995F64	3k ohm		
R916	06S64995F60	2k ohm		
R917	06S64995F45	470 ohm		
R918	06T70072F37	220 ohm 1/4W		
VR404	18T15284W01	Volume, Slide (Treble)		
VR405	18T15284W01	Volume, Slide (Bass)		

Symbol No.	Part No.	Description		
QRB P. C. Board				
Capacitors				
C650	08S65128F57	CP., 1000pF		
C651	08S65128F57	CP., 1000pF		
C652	08S65128F57	CP., 1000pF		
C653	08S65128F57	CP., 1000pF		
C654	08S65128F57	CP., 1000pF		
C655	08S65128F57	CP., 1000pF		
C656	08S65128F57	CP., 1000pF		
C657	08S65128F57	CP., 1000pF		
C658	08S65128F57	CP., 1000pF		
C659	08S65128F57	CP., 1000pF		
C660	08S65128F57	CP., 1000pF		
C661	08S65128F57	CP., 1000pF		
C662	08S65128F57	CP., 1000pF		
C663	08S65128F57	CP., 1000pF		
Miscellaneous				
BA601	60T91060F01	Battery Lithium (CR2032−HE2)		
E801	09T15921W03	QRB, Connector (22P)		
FL901	65T15282W03	FL Display, VFD (6−BT−86N)		
HD201	88T15309W01	Pick Up		
LD304	48T16057W02	LED, AN501		
M301	01V13100W97	Assy., Motor Load		
M302	59T91005F01	Motor, Spindle		
M303	59T52973F03	Motor, Sled		
PT304	48T92913F01	Transistor, Photo PT360		
S301	40T71025F03	Switch, Detector (CAM END)		
S302	40T71025F01	Switch, Detector (LIMIT)		
SD301	01A90816F01	Assy., DP Frame Solenoid		

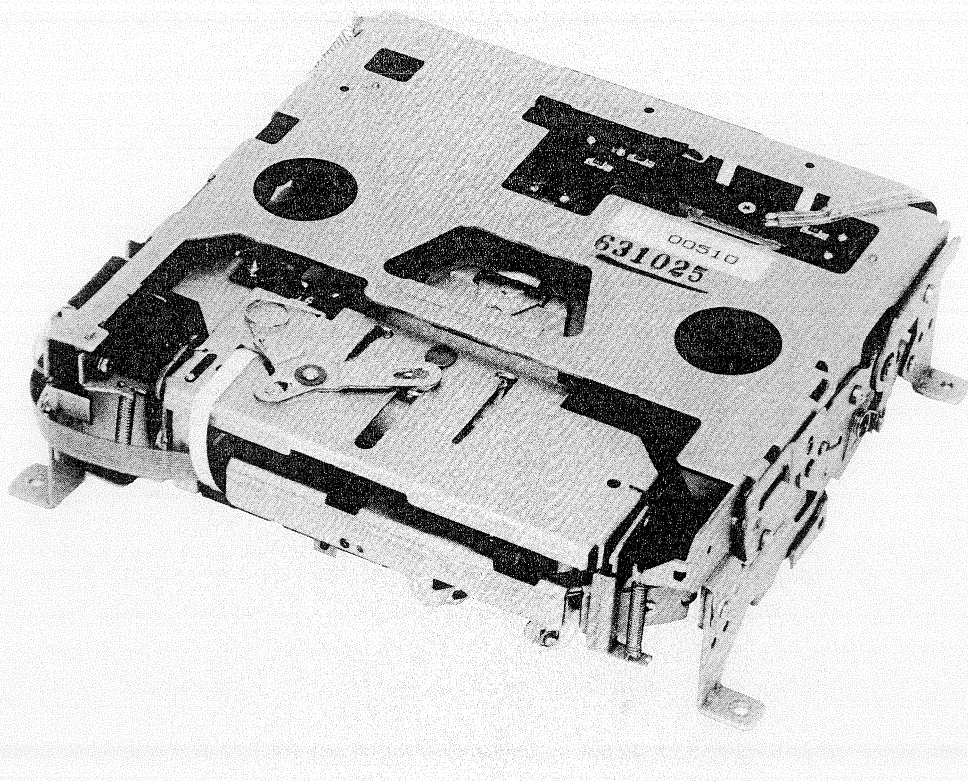
Packing Assembly Parts List

Symbol No.	Part No.	Description		
101	01V11900W92	Assy., Installation Kit		
101-1	02B47353F01	Nut, Hex (M5)		
101-2	03S40012G66	Screw, Tapping (M5 × 20)		
101-3	03B44963F03	Bolt, Hex W/Washer (M5 × 10)		
101-4	03A40155F05	Bolt, Hex (M5 × 14)		
101-5	03A40155F01	Bolt, Hex (M5 × 8)		
101-6	03A84814F04	Screw, Bind (M2.6 × 18)		
101-7	43A58272F04	Spacer		
101-8	45A41684U01	Arm, Adapter		
102-1	68P10790W82	Owner's Manual		
102-2	68P13420W34	Owner's Manual		
103	56S12717W29	Carton, Packing (Individual)		
104	56D13048W01	Tray, Packing (L)		
105	56D13048W02	Tray, Packing (R)		
106	56B40990T36	Sack, Polyethylene		
107	07B64552F01	Bracket, Strap Receiver		
108	01V16200W69	Assy., Mother Case		
108-1	01T94603F07	Assy., QRB Connector (PLUG)		
108-2	15D94518F01	Case, Mother		
108-3	03S44205G33	Screw, Pan (M2.6 × 8)		
108-4	03S44205G07	Screw, Pan (M2.6 × 5)		
109	01T96095F01	Assy., Connector (4P)		
110	01T15832W01	Assy., RCA 600		

ALPINE SERVICE MANUAL

CD Player Mechanism

ADDENDUM & REVISED (III)


00510
631025

DP-S SERIES

Contents

Mechanism Function Description ········· 3 to 10

Disassembly Instructions

(For DP24A010/DP24A020/DP24A110/DP24A11A/DP24A210 models) ········· 11 to 14

CD Mechanism Assembly Parts List

(For DP24A010/DP24A020/DP24A110/DP24A11A/DP24A210 models) ········· 15 to 16

Exploded View (CD Mechanism)

(For DP24A010/DP24A020/DP24A110/DP24A11A/DP24A210 models) ········· 17 to 18

CD Mechanism Assembly Parts List (For DP24A220 model) ········· 19 to 20

Exploded View (CD Mechanism) (For DP24A220 model) ········· 21 to 22

CD Mechanism Assembly Parts List (For DP22A070/DP22A080 DP22A310/DP22A320 models) ····· 23 to 24

Exploded View (CD Mechanism) (For DP22A070/DP22A080 DP22A310/DP22A320 models) ········· 25 to 26

Disassembly Instructions (For DP22A070/DP22A080 DP22A310/DP22A320 models) ········· 27 to 29

Mechanism Function Description

Function	Step	Description	Illustration
LOADING (of a 12cm CD)	①	The beam to the photo sensor (A) will be broken when a disc is inserted into the loading position.	Figure 1
	②	The mechanism detects the disc insertion and actuates the Loading motor to rotate. The rotation of motor is transmitted to the drive roller through gears (E), (D), (B) and (A).	Figure 2 Figure 7
	③	The disc will be pinched between the drive roller and the upper guide and pulled into the mechanism.	Figure 7
	④	The disc reaches to the sensor gate mechanism. The beam to the photo sensor (D) is broken, and simultaneously the micro-processor discriminates 12 or 8cm CD size depending on the photo sensor (B). If the beam to the photo sensor (B) is broken, the micro-processor detects that the disc is a 12cm CD and it continues feeding the disc.	Figure 3

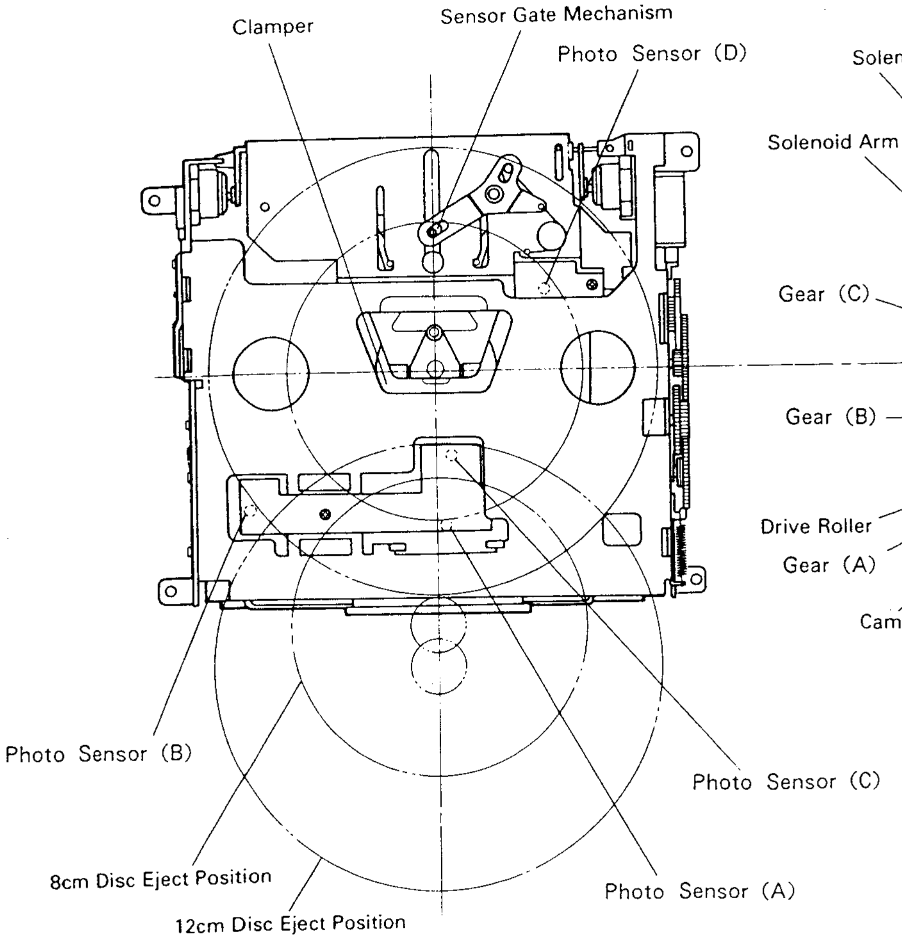

Clamper
Sensor Gate Mechanism
Photo Sensor (D)
Photo Sensor (B)
Photo Sensor (C)
8cm Disc Eject Position
12cm Disc Eject Position
Photo Sensor (A)

Figure 1

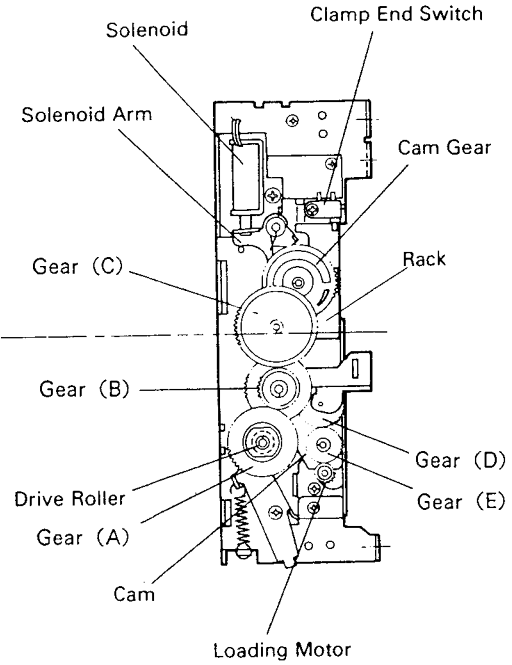

Solenoid
Clamp End Switch
Solenoid Arm
Cam Gear
Gear (C)
Rack
Gear (B)
Gear (D)
Drive Roller
Gear (E)
Gear (A)
Cam
Loading Motor

Figure 2

Function	Step	Description	Illustration
LOADING (of a 12cm CD)	⑤	The disc touches the left and right stopper pins, and push them by the feed mechanism. By pushing the stopper pins, the left and right lock levers rotate and the lock pins remove from the lock position of the guide holes.	Figure 3
	⑥	The disc touches the disc stopper and moves the unlocked sensor gate to the outer direction by the feed mechanism.	Figure 4
	⑦	If the disc reaches to the end position, the beam reaches to the photo sensor (B).	Figure 4
	⑧	The mechanism detects that the disc is pulled into the chucking position and starts chucking action.	Figure 4

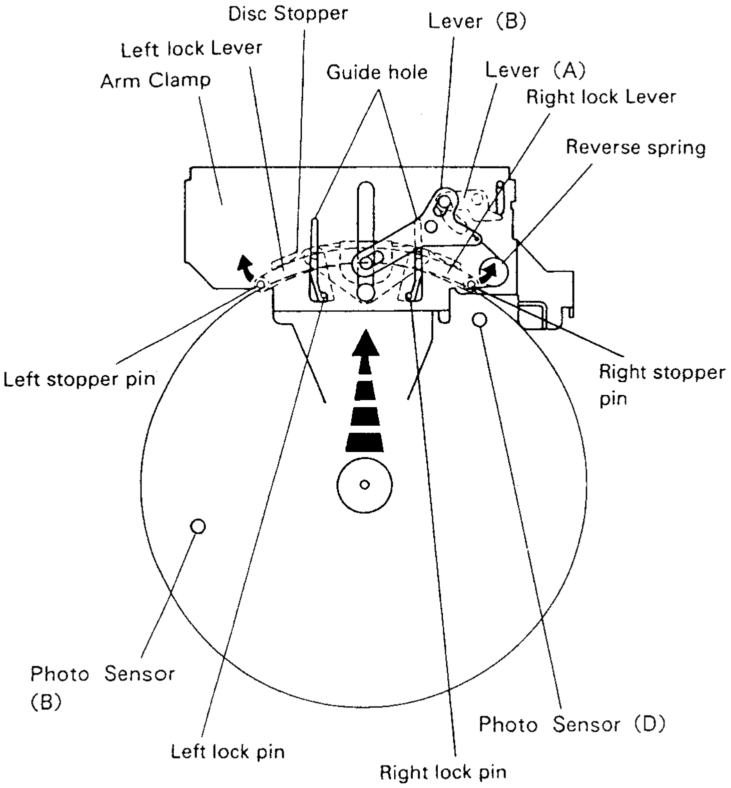

Disc Stopper
Lever (B)
Left lock Lever
Arm Clamp
Guide hole
Lever (A)
Right lock Lever
Reverse spring
Left stopper pin
Right stopper pin
Photo Sensor (B)
Left lock pin
Photo Sensor (D)
Right lock pin

Figure 3

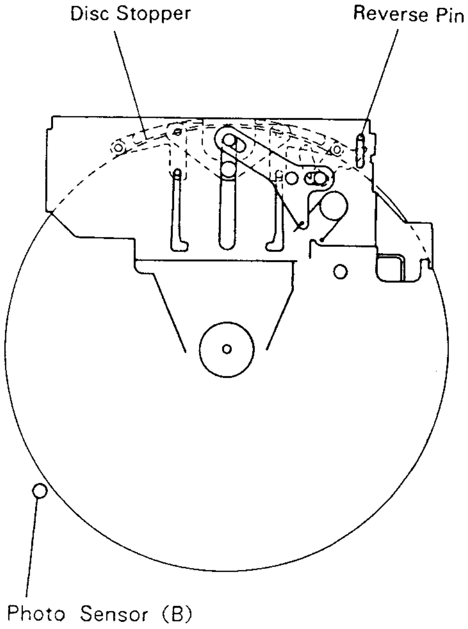
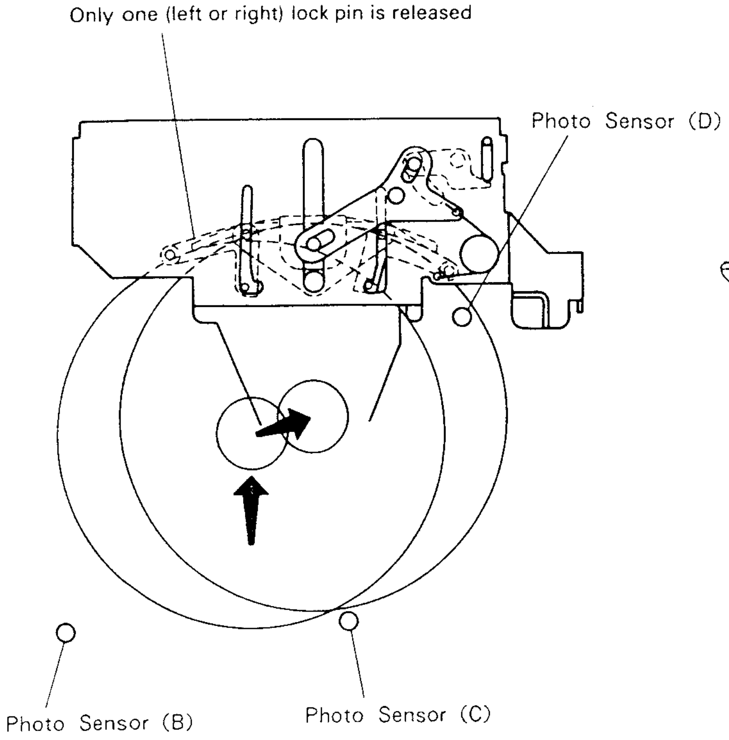

Disc Stopper
Reverse Pin
Photo Sensor (B)

Figure 4

Function	Step	Description	Illustration
LOADING (of a 8cm CD)	① ② ③	The same process as 12cm CD loading operation steps①~③.	Figure 1 Figure 2 Figure 7
	④	The disc reaches to the sensor gate mechanism. The sensor gate mechanism moves depending on the disc insertion position at the disc slot as follows. A) When the disc is inserted at the center of the slot. The disc touches to the disc stopper. The disc cannot push both the left and right stopper pins, so that the locking pins cannot be released. The disc movement stops there. B) When the disc is inserted at the deviated position to the left or right from the center of the slot. First, the disc pushes the left or right stopper pin. The disc cannot push the another stopper pin, so that the locking pins cannot be released. The disc moves by the shape of the disc stopper to the center position and stops.	Figure 5
	⑤	If the beam reaches to the photo sensor (B) and (C) when the beam to the photo sensor (D) is broken by the disc, the mechanism discriminates that the 8cm CD is in the chucking position, and starts chucking action.	Figure 5



When a disc is inserted at the left from the center of the slot.

Figure 5

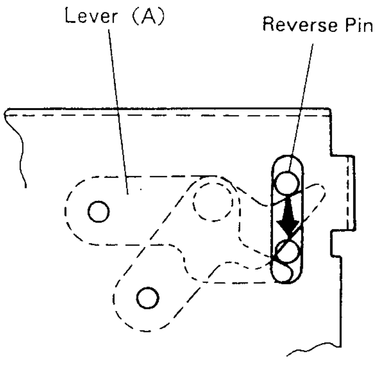


Figure 6

Function	Step	Description	Illustration
CHUCKING	①	The mechanism detects that the disc is pulled into the Chucking position and pulls the solenoid.	Figure 8
	②	The solenoid arm connected with the solenoid starts to rotate and transmits the rotation to the cam gear.	Figure 8
	③	The cam gear starts to rotate and engages with the gear (C) then the driving power of the Loading motor will be transmitted to the cam gear.	Figure 8
	④	The rotating cam gear engages with rack, and moves the rack toward the right.	Figure 8
	⑤	With the movement of the rack, the following functions will be performed simultaneously. A. The clamper moves downward and chucks the disc. B. The drive roller moves downward and releases the disc pinched previously and moves the disc downward. C. Releases the locking on the pickup block and places the unit in the floating status.	Figure 8 Figure 9 Figure 10
	⑥	The rack slides to the right end and releases the engagements between the gear (C) and the cam gear as well as the cam gear and rack, and turns the clamp end switch on.	Figure 8
	⑦	The mechanism detects that the clamp operation has finished, and the Loading motor stops rotating.	Figure 8

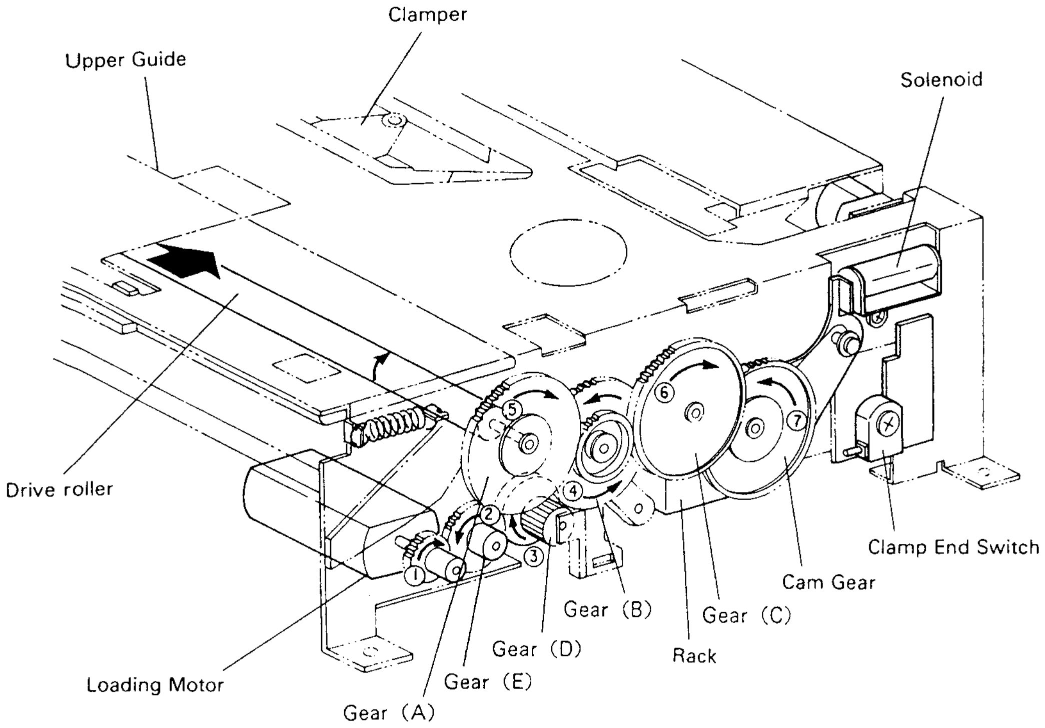


Figure 7

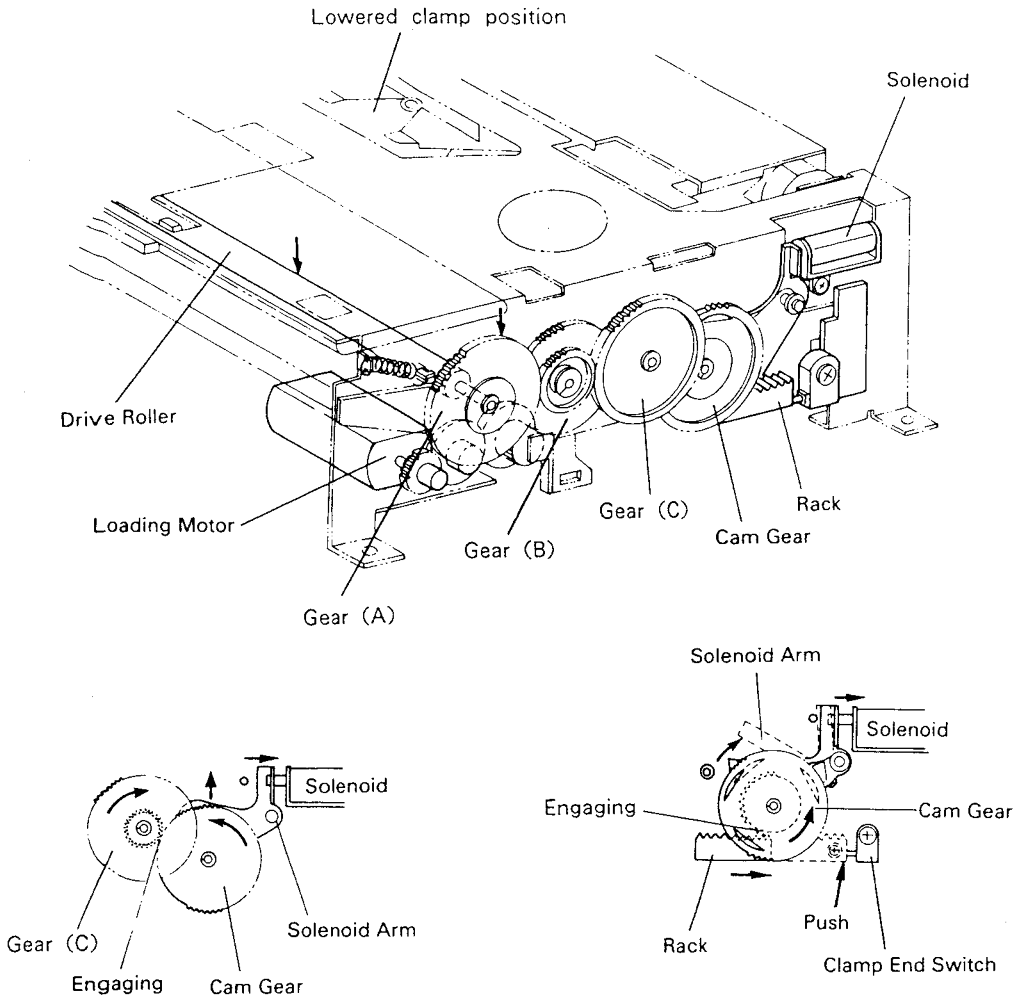

Lowered clamp position
Solenoid
Drive Roller
Loading Motor
Gear (A)
Gear (B)
Gear (C)
Cam Gear
Rack
Solenoid
Gear (C)
Engaging
Cam Gear
Solenoid Arm
Solenoid Arm
Solenoid
Engaging
Cam Gear
Rack
Push
Clamp End Switch

Figure 8

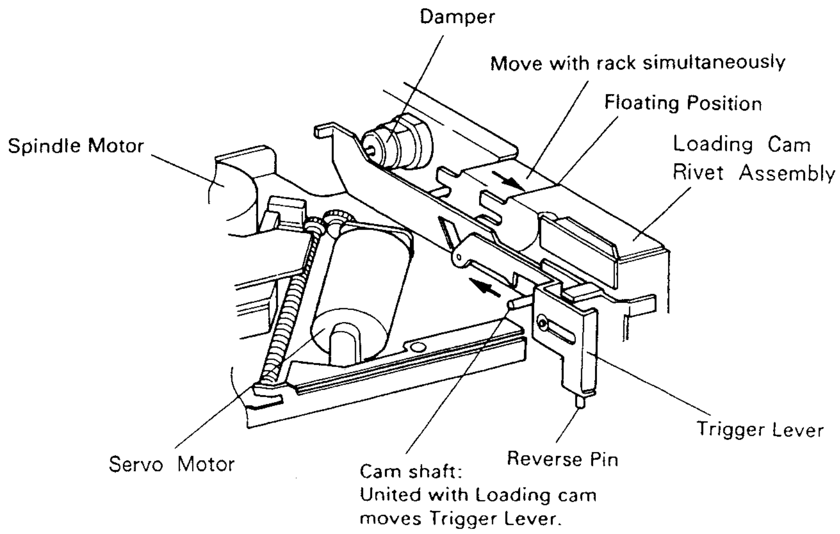

Damper
Move with rack simultaneously
Floating Position
Loading Cam
Rivet Assembly
Spindle Motor
Servo Motor
Reverse Pin
Cam shaft:
United with Loading cam
moves Trigger Lever.
Trigger Lever

Figure 9

Function	Step	Description	Illustration
PLAY	①	The spindle motor rotates the disc.	Figure 10
	②	The rotation of the servo motor is transmitted to the shaft screw through the gear, moves the pickup.	Figure 10
	③	The Inner limit switch detects the lead-in position of the disc, and the mechanism begins to read the information of the disc.	Figure 10

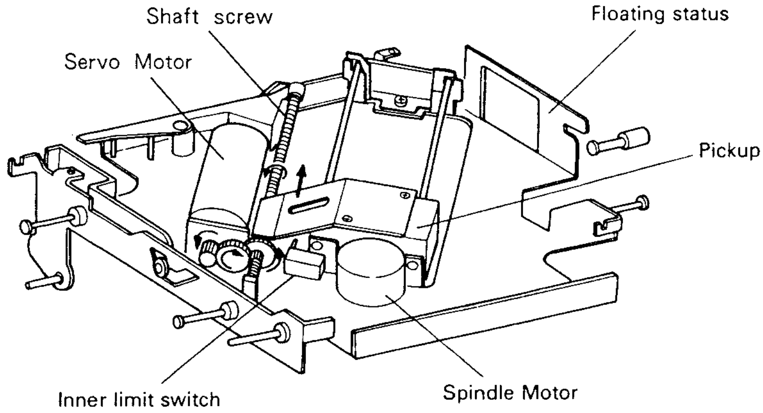


Figure 10

Function	Step	Description
EJECTION (of a 12cm CD)	①	The Loading motor rotates in the reverse direction when loading.
	②	Pulls the solenoid.
	③	The solenoid arm engaged with the solenoid starts rotating and the cam gear engages with the gear (C).
	④	The cam gear rotates and engages with the rack and then moves the rack in the left direction.
	⑤	Engaging with the movement of the rack, the following functions will be performed simultaneously. A. The clamper moves upward and releases the disc. B. The driving roller moves up and lifts the disc, and pinches the disc between it and the upper guide. C. Locks the pickup block. D. The reverse pin moves with engaging the levers (A) and (B), which moves the sensor gate mechanism to the original position.
	⑥	When the rack moves to the left, the engagements between the gear (C) and the cam gear, the cam gear and the rack will be released.

Function	Step	Description
EJECTION (of a 12cm CD)	⑦	The disc which is pinched between the drive roller and the upper guide moves to the outside of the mechanism. When the disc is sent out to the EJECT position, the beam broken by the disc is released and reaches the photo sensor (B).
	⑧	The mechanism detects that the disc has come out to the EJECT position and stops the motor rotation.
	⑨	The mechanism detects that all functions have finished when the disc is pulled out from the mechanism and beam is passed through to the photo sensor (A).
RELOAD (of a 12cm CD)	①	If the disc is not pulled out from the mechanism for 15 seconds after it comes to the EJECT position, the mechanism actuates the Loading function steps ① – ⑧.
EJECTION (of a 8cm CD)	① ② ③ ④	The same process as 12cm CD Eject operation steps ①~④.
	⑤	Engaging with the movement of the rack, the following functions will be performed simultaneously. A. B. C. ┣ The same process as 12cm CD Eject operation step⑤ – A, B, C.
	⑥	The same process as 12cm CD Eject operation step ⑥.
	⑦	The disc which is pinched between the drive roller and the upper guide moves to the outside of the mechanism. The disc is released from the drive roller and stops.
	⑧	If the beam reaches the photo sensor (C) after 1.5 seconds from starting ejection, the motor stops.
	⑨	The mechanism detects that all functions have finished, when the disc is pulled out from the mechanism and beam is passed through to the photo sensor (A).

Function	Step	Description
TROUBLE SHOOTING (While Loading a 12cm CD)	①	If the beam to the photo sensor (D) is not broken within 3 seconds after the Loading motor begins rotating as described in the Loading operation step ②, the mechanism takes it as trouble and rotates the Loading motor inversely and pushes the disc out to the EJECT position.
	②	In the Loading step ④, if the beam does not reach the photo sensor (D) within 3 seconds after the beam to the photo sensor (B) is broken, the mechanism take it as trouble and rotates the loading motor inversely and push the disc out to the eject position. If the disc is removed and the beam reaches the photo sensor (A), the mechanism performs loading, chucking and ejection without a disc. (To place the sensor gate mechanism from the END position to the original position the mechanism operates the Ejection step ⑤–d)
	③	When the disc is pulled out during the loading process, the Loading motor rotates inversely and stops the rotating after certain seconds.
(While loading a 8cm CD)	①	The same process as 12cm CD loading operation step①.
	②	The same process as 12cm CD loading operation step③.
(While Chucking)	①	In the chucking operation (step ①) if the Clamp End Switch doesn't turn on within 3 seconds after the solenoid is pulled, the mechanism takes it as trouble and rotates the Loading motor inversely and pushes the disc out and stops at the EJECT position. When the disc doesn't come to the EJECT position, the motor stops the rotating after certain seconds.
(While Playing)	①	After disc chucking, if the mechanism is unable to read the information of the disc for some reason, it actuates the EJECTION operation steps.
(While Ejecting a 12cm CD)	①	If the disc doesn't come to the EJECT position within 5 seconds after the solenoid is pulled in the EJECTION operation step ①, the mechanism takes it as trouble and rotates the Loading motor inversely and performs the Loading operation steps.
(While Ejecting a 8cm CD)	①	If the beam does not reach the photo sensor (C) within 1.5 seconds after starting ejection, the motor continues rotating. If the beam does not reach the photo sensor (C) within 5 seconds after starting ejection, the mechanism takes it as trouble and changes the motor rotating direction and performs loading steps.

Disassembly Instructions

● For DP24A010/DP24A020/ DP24A110/DP24A11A/ DP24A210/DP24A220 models

1. Removal of the Load/Photo P. C. Boards

(1) Remove three screws marked with "○" as shown in Figures 11 and 12.

(2) Remove the solder (c) as shown in Figure 11.

2. Removal of the LED P. C. Board

(1) Remove the solder (b) as shown in Figure 12.

(2) Remove the screw marked with "▲" as shown in Figure 12.

3. Removal of the End Switch (A) P. C. Board

(1) Remove the two screws marked with "●" as shown in Figure 13.

(2) Remove the two lead wires from the solenoid.

4. Removal of the Pick-Up Unit

(1) Remove the cam gear and the gear (C) as shown in Figure 13.

(2) Remove the four screws marked with "※" as shown Figures 13 and 14.

(3) Both the Pick-Up Unit and Rivet Loading Bracket Assembly will be removed.

Note :The cam gear and gear (C) are mounted with washers. Do not lose the washers, keep them carefully.

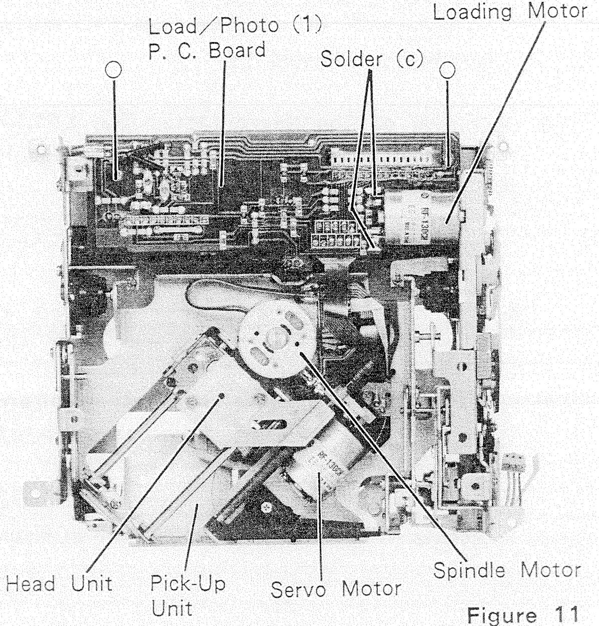

Load/Photo (1) P. C. Board
Loading Motor
Solder (c)
○
○
Head Unit
Pick-Up Unit
Servo Motor
Spindle Motor

Figure 11

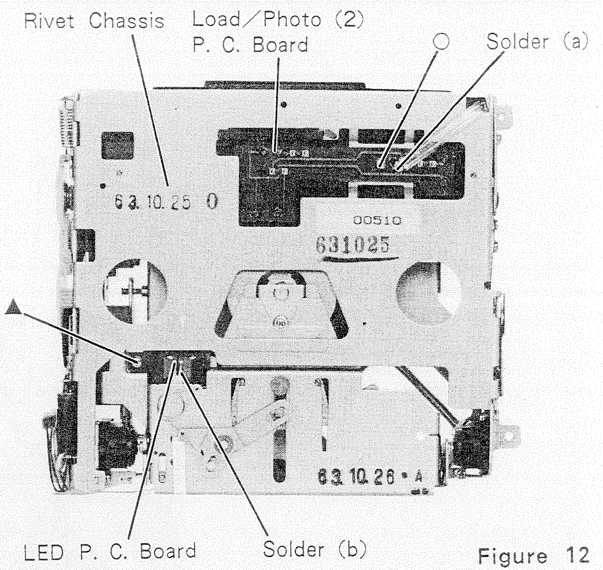

Rivet Chassis
Load/Photo (2) P. C. Board
○
Solder (a)
▲
LED P. C. Board
Solder (b)

Figure 12

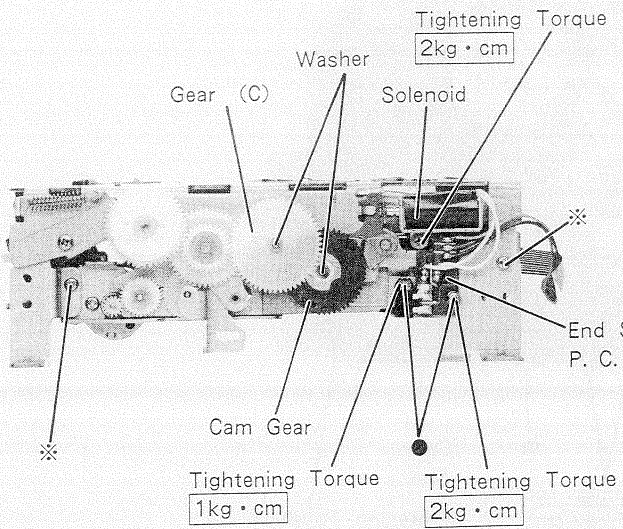

Tightening Torque
2kg・cm
Washer
Gear (C)
Solenoid
※
End Switch (A) P. C. Board
Cam Gear
※
●
Tightening Torque
1kg・cm
Tightening Torque
2kg・cm

Figure 13

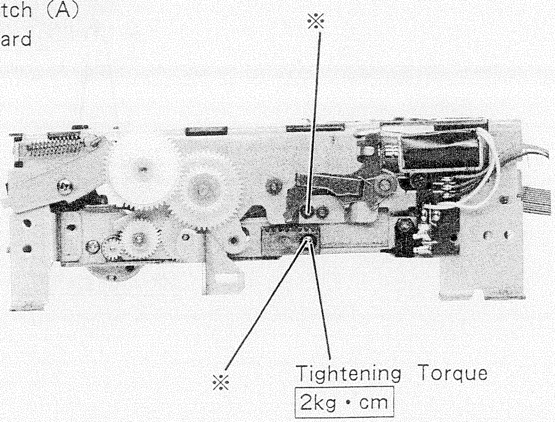

※
※
Tightening Torque
2kg・cm

Figure 14

5. **Removal of the Rivet Loading Bracket Assembly**

(1) After removing the Pick-Up Unit, pull the Rivet Loading Bracket Assembly toward you while twisting it in the direction shown by the arrow, as shown in Figure 15.

6. **Removal of the Servo Motor [For DP24A010 / DP24A020 / DP24A110 / DP24A11A / DP24A210 models only]**

(1) After removing the Rivet Loading Bracket Assembly, remove the two screws marked with "☐" as shown in Figure 16.

Note :Both the Servo Motor and Flexible wire will be removed. Do not damage the flexible wire.

7. **Removal of the Head Unit [For DP24A010/DP24A020/DP24A110/DP24A11A/DP24A210 models only]**

(1) After removing the Servo Motor, remove the two screws marked with "◆" as shown in Figure 16.

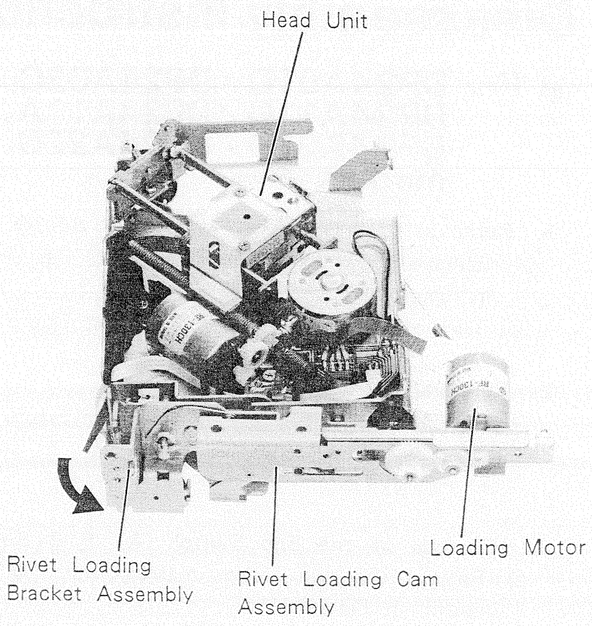

Head Unit
Rivet Loading Bracket Assembly
Rivet Loading Cam Assembly
Loading Motor

Figure 15

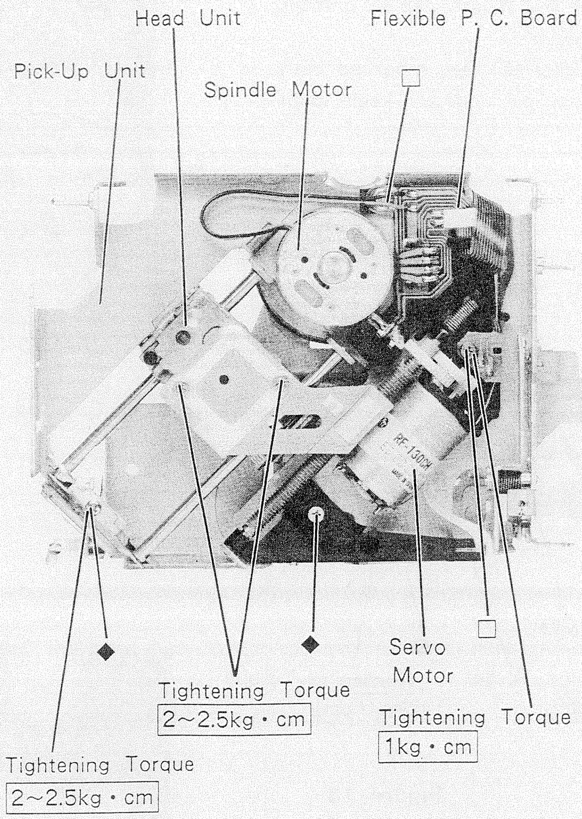

Head Unit
Flexible P. C. Board
Pick-Up Unit
Spindle Motor
☐
◆
◆
Servo Motor
☐
Tightening Torque
2~2.5kg · cm
Tightening Torque
1kg · cm
Tightening Torque
2~2.5kg · cm

Figure 16

6. Removal of the Servo Motor [For DP24A220 models only]

(1) After removing the Rivet Loading Bracket Assembly, remove the two screws marked with "□" as shown in Figure 17.

Note :Both the Servo Motor and Flexible wire will be removed. Do not damage the flexible wire.

7. Removal of the Head Unit [For DP24A220 models only]

(1) After removing the Servo Motor, remove the five screws marked with "◆" as shown in Figure 17.

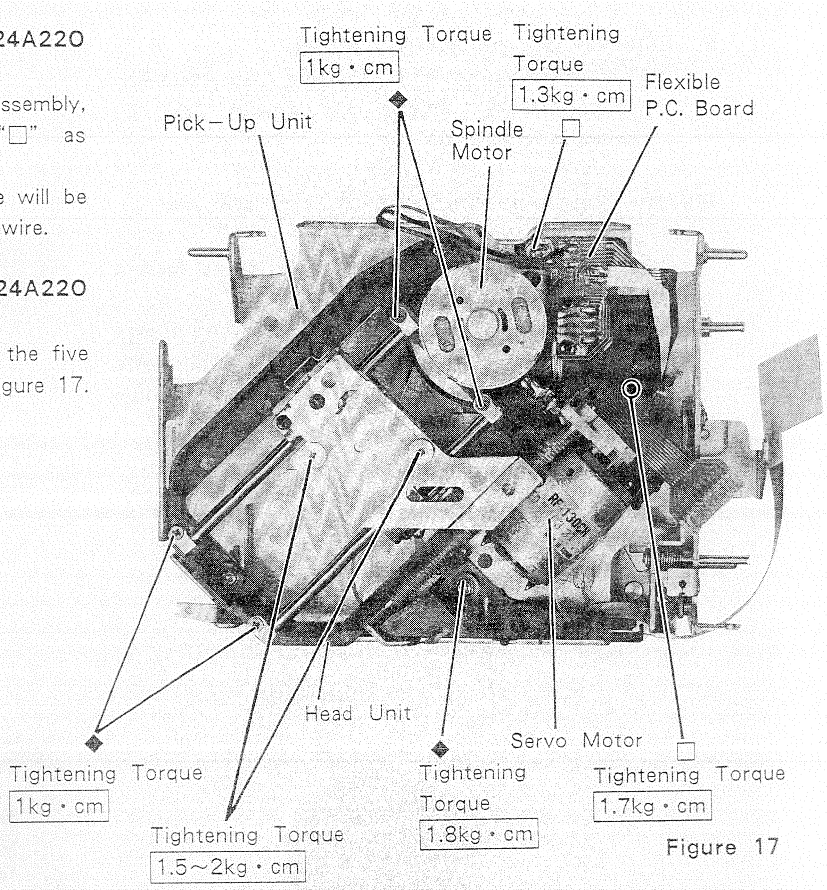

Tightening Torque
1kg・cm
◆
Tightening Torque
1.3kg・cm
□
Flexible P.C. Board
Pick−Up Unit
Spindle Motor
Head Unit
Servo Motor
◆
Tightening Torque
1kg・cm
Tightening Torque
1.5∼2kg・cm
◆
Tightening Torque
1.8kg・cm
□
Tightening Torque
1.7kg・cm

Figure 17

8. Removal of the Rivet Loading Cam Assembly

(1) After removing the Rivet Loading Bracket Assembly, remove the gear (D) and gear (E) as shown in Figure 18.

(2) Remove the Washer and "E" ring as shown in Figures 18 and 20.

Note : 1) Do not lose the washer and "E" ring and keep them carefully.

2) Remove the spring and them at the same time as shown in Figure 18.

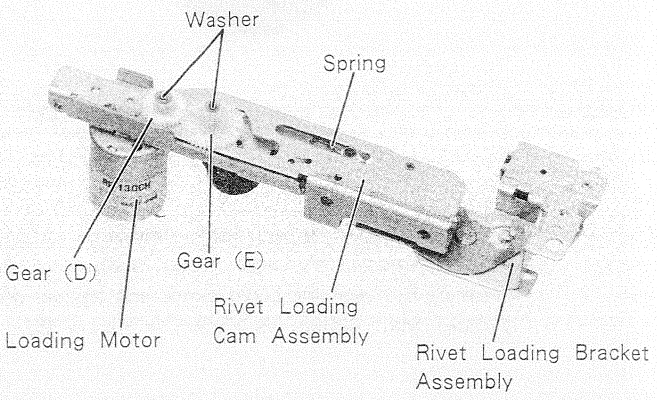

Washer
Spring
Gear (D)
Gear (E)
Loading Motor
Rivet Loading Cam Assembly
Rivet Loading Bracket Assembly

Figure 18

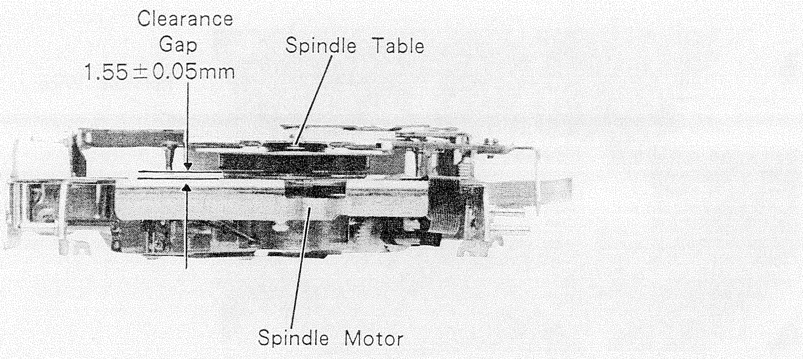

Clearance Gap
1.55±0.05mm
Spindle Table
Spindle Motor

Figure 19

9. Removal of the Loading Motor.

(1) After removing the Rivet Loading Cam Assembly, remove the two screws marked with "△" as shown in Figure 20.

※**Useful hints for remounting the cam gear and gear (C).**

(1) Set the Rivet Loading cam Assembly to the loading position as shown in Figure 21.

(2) Engage the cam gear with the gear (C) as shown in the Figure 22, and mount them on the shafts (A) of the Arm Load (R) Assembly as shown in Figure 21.

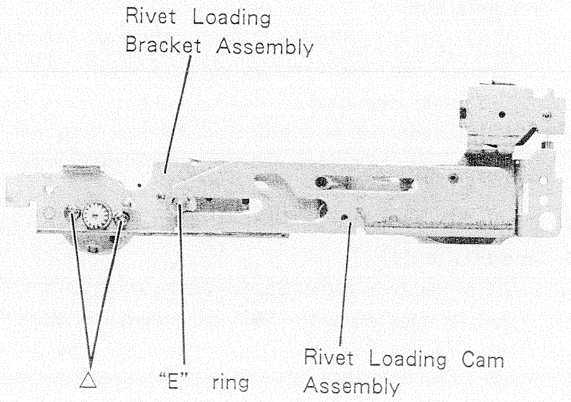

Rivet Loading Bracket Assembly
△
"E" ring
Rivet Loading Cam Assembly

Figure 20

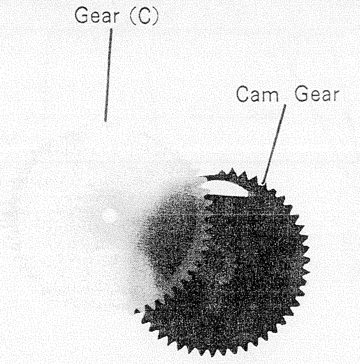

Gear (C)
Cam Gear

Figure 22

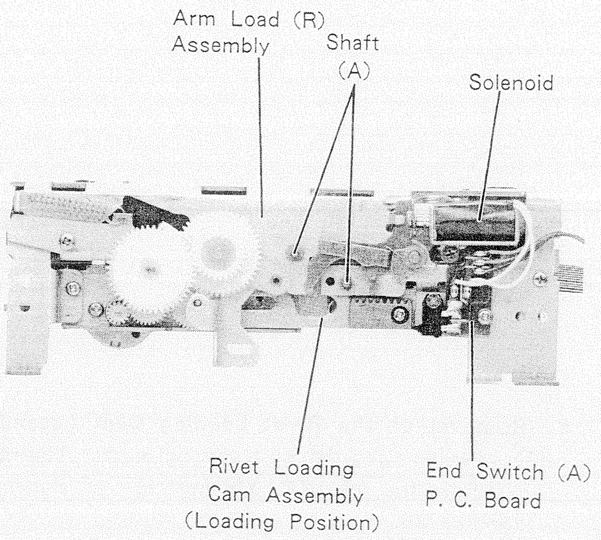

Arm Load (R) Assembly
Shaft (A)
Solenoid
Rivet Loading Cam Assembly (Loading Position)
End Switch (A) P. C. Board

Figure 21

※**Caution on remounting the Servo Motor.**

(1) After mounting the servo motor, make sure the clearance between the servo motor and flexible wire is more than 0.5mm as shown in Figure 23.

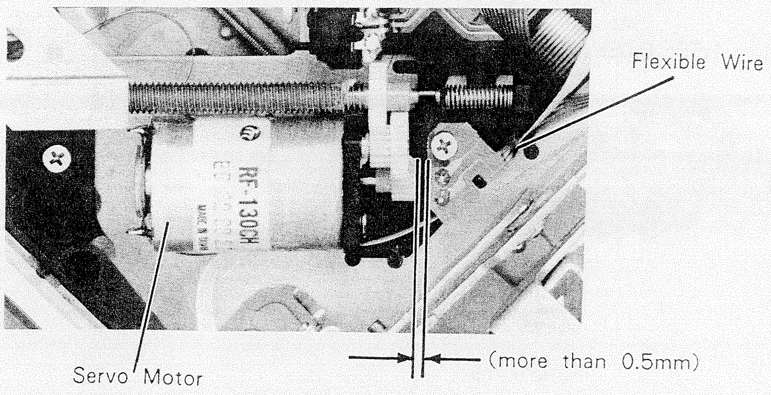

Flexible Wire
RF-130CH
Servo Motor
(more than 0.5mm)

Figure 23

CD Mechanism Assembly Parts List

● For DP24A010/DP24A020/DP24A110/DP24A11A/DP24A210 Models

Symbol No.	Index	Part No.	Description		
202	4-H	15C13518W01	Guide, Top (DP-2)		
203	5-C	03S44205G14	Screw, Pan (M2 × 5)		
204	5-B	30T73687F18	Parallel Wire (2P)		
205	4-C	41B12249W02	Spring, Pull		
206		04B41345P06	Washer, Lock (M2.1)		
207	1-E	41A20219W01	Spring, ROL (L)		
208	5-F	45A90817F01	Arm, Solenoid (1)		
209	5-F	45A90818F01	Arm, Solenoid (2)		
210	5-F	41A92364F01	Spring, Solenoid		
211	2-F	07B10907W01	Stopper, Disc		
212	4-F	47A61544F02	Plunger, RF Solenoid		
213	3-G	75A20934W01	Cushion, Magnet (B)		
214	4-F	84A92276F01	END Switch (A) P.C. Board		
215		03D40014G66	Screw, W/Washer (M2 × 3.5)		
216		03D40014G07	Screw, W/Washer (M2 × 4)		
217	4-F	44B90838F01	Gear, Cam		
218	4-C	46A91007F02	Stud, Gear		
219	4-E	41B12249W07	Spring, Pull		
221	2-F	49B90822F01	Roller (G)		
223		43A90873F01	Bush, Roller		
225	4-C	41A90877F01	Spring, Cam		
226		03D40014G62	Screw, W/Washer (M2 × 3)		
227	5-C	44A90836F01	Gear (D)		
228	5-C	44A90837F01	Gear (E)		
229	5-C	04B41345P01	Washer, Lock (M1.2)		
230		75B11922W02	Damper, DP-3		
231		15A12929W01	Holder, Damper-3		
232	4-D	04C42091G06	Ring "E" (M1.5)		
233	5-C	04C42091G11	Ring "E" (M2.5)		
234	3-C	03S94385F01	Screw, Pan (M1.7 × 2.3)		
236	4-C	41A11905W01	Spring, Trigger		
237	4-F	04C42091G05	Ring "E" (M2)		
238	2-B	07A10921W01	Bracket, Shaft		
239	4-A	03A90175F05	Screw, Bind (M2 × 3.7)		
240		03S94385F09	Screw, Pan (M2 × 3)		
241	4-A	03D40014G75	Screw, W/Washer (M2 × 9)		
242	3-B	03D40121T38	Screw, W/Double Washer (M2 × 5)		
243	3-E	43A22104W01	Table, Spindle		
244	3-B	07B10923W01	Bracket, Screw		
245	2-C	47A20146W01	Shaft, Pick-up		
246	4-D	43A11901W01	Bush, Triger (A)		
247		04B41345P15	Washer, Lock (M1.2)		
248	3-D	01B12125W01	Assy., Riv. Pick Chassis		
249	3-B	47A10927W01	Shaft, Screw		
250	3-B	44A90998F01	Gear, Screw		
252	4-B	44A90996F01	Gear, Motor		
253	4-G	41B12249W08	Spring, Pull		
254	4-C	44A90997F01	Gear, Middle		
255		04B41345P02	Washer, Lock (M1.7)		
256	4-F	03S94385F23	Screw, Pan (M2 × 5)		
257	5-D	03S94385F07	Screw, Pan (M2 × 2)		
258	3-C	07C10922W01	Bracket, Motor		
259	4-B	41A10928W03	Spring, Shaft		
262	5-G	04S40075G12	Washer, Polyslider (M3.1)		
263	3-B	41C10925W01	Spring, Nut		
264	3-E	14A96087F01	Sheet, Table		
265	4-B	84T15149W01	FPC Actuate P.C.Board		
266	4-E	01A12222W01	Assy., Clamper Rivet		
267	4-E	01B12123W01	Assy., Riv. Arm Clamp		
269	3-F	41A11903W01	Spring, Lever		
270	3-F	04B41345P04	Washer, Lock (M2.6)		
271	3-E	07A30152W01	Bracket, Disc Stopper		
272	3-F	41B12249W01	Spring, Pull		
273	4-F	07A11468W01	Plate, Top		
274	5-C	44A90830F01	Rack, Cam		
275	4-F	03S44205G94	Screw, Pan (M1.7 × 2)		
277	2-B	47A21175W01	Shaft, Pick-up		
279	1-C	41B12249W03	Spring, Pull		
280	2-E	41B12249W04	Spring, Pull		
281	4-D	41B12249W05	Spring, Pull		

NOTE : The parts without part numbers are not supplied.

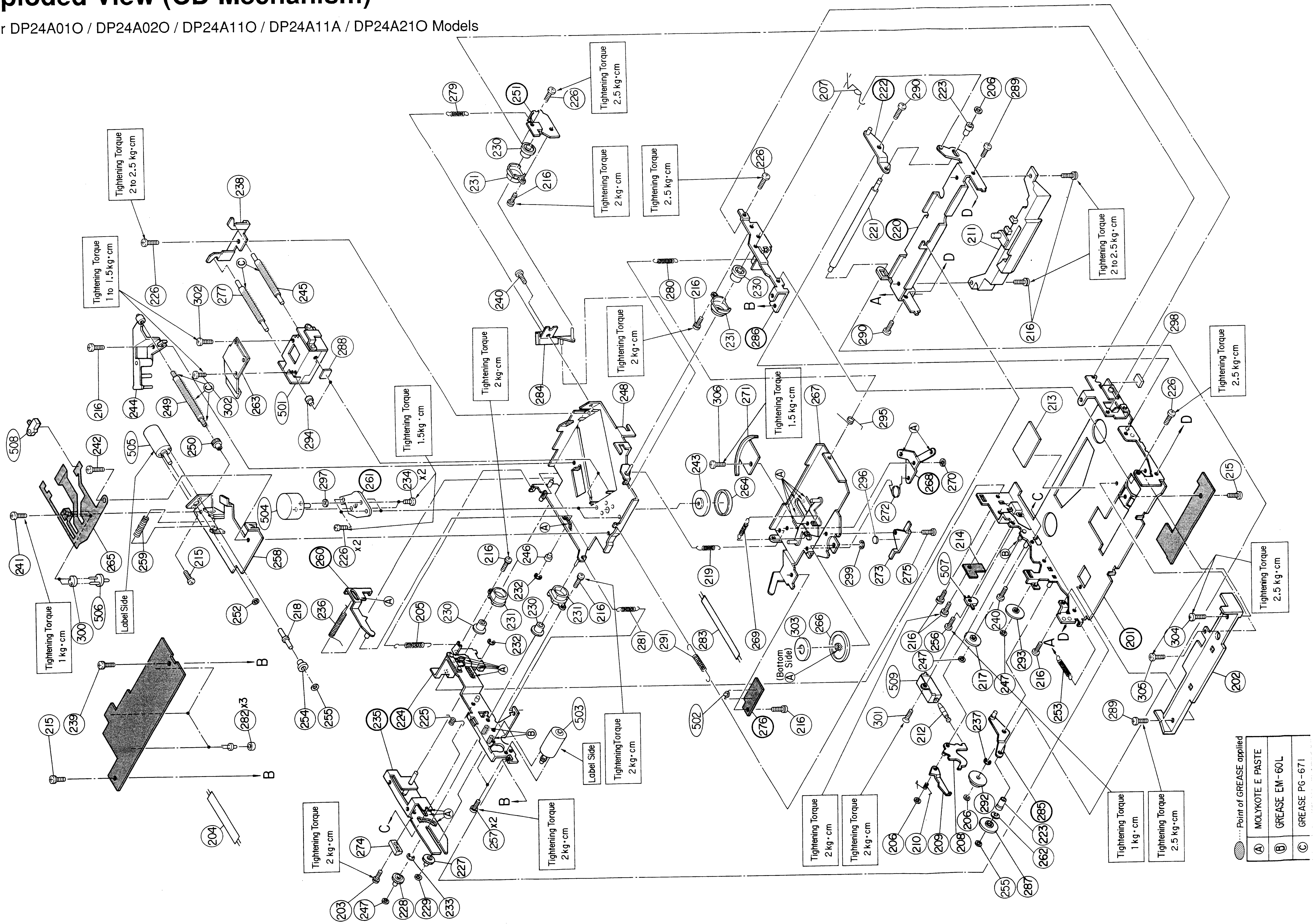
Symbol No.	Index	Part No.	Description		
282	4-B	43A20208W01	Spacer, LED		
283	4-E	30T73687F19	Parallel Wire (2P)		
284	3-D	01A92321F02	Assy., Bracket Rivet (CLP−LP)		
287	5-G	01T15181W01	Assy., Clutch DP		
288	2-C	75A21138W01	Sheet, Shaft		
289		03A90175F01	Screw, Bind (M2 × 4)		
290		03A90175F02	Screw, Bind (M2 × 3)		
291	4-E	41B90875F07	Spring, Pull		
292	5-F	44A90834F01	Gear (B)		
293	4-F	44A90835F01	Gear (C)		
294	3-C	43A13508W01	Spacer, Shaft		
295	3-F	41A96086F01	Spring, Arm Clamp		
296	3-F	43A41006F01	Spacer, Polyslider		
297	3-C	43A22457W01	Spacer		
or		43A22457W02	Spacer		
298	2-G	75A20928W01	Rubber, Top Chassis		
299	4-F	04B41345P24	Washer, Lock (M2.1)		
300	4-A	43A20208W02	Spacer, LED (A)		
301	4-F	03S94385F14	Screw, Countersink (M2.6 × 3)		
302		03S94385F25	Screw, Pan (M2 × 4)		
303	4-E	75A20128W01	Sheet, Holder		
304	4-G	03S44205G96	Screw, Bind (M2 × 5)		
305	4-G	03S44205G95	Screw, Bind (M2 × 3)		
306	3-E	03S94385F24	Screw, Pan (M2 × 3)		
Miscellaneous					
501	3-C	88T15309W01	Pick-up, Unit		
502	4-E	48T16057W02	LED, AN501 (RED)		
503	4-D	01V13100W97	Assy., Motor Load		
504	3-C	59T91005F01	Motor, Spindle		
505	3-B	59T52973F03	Motor, Servo		
506	4-B	48T92913F01	Transistor, Photo PT360		
507	4-F	40T71025F03	Switch, Detector (CAM END)		
508	3-A	40T71025F01	Switch, Detector (LIMIT)		
509	4-F	01A90816F01	Assy., Solenoid DP Frame		

Symbol No.	Index	Part No.	Description		

NOTE : The parts without part numbers are not supplied.

Exploded View (CD Mechanism)

- For DP24A01O / DP24A02O / DP24A11O / DP24A11A / DP24A21O Models


Tightening Torque 2.5 kg·cm
226
251
279
230
231
216
Tightening Torque 2 kg·cm
Tightening Torque 2.5 kg·cm
226
207
222
290
223
206
289
221
220
D
211
D
A
290
216
Tightening Torque 2 to 2.5 kg·cm
Tightening Torque 2 to 2.5 kg·cm
238
Tightening Torque 1 to 1.5 kg·cm
226
302
277
245
216
244
249
302
263
501
288
294
505
250
242
508
241
265
259
215
258
504
297
261
234 x2
226 x2
Tightening Torque 1 kg·cm
300
506
Label Side
252
218
254
255
239
215
282 x3
B
B
204
240
284
Tightening Torque 2 kg·cm
Tightening Torque 1.5 kg·cm
248
280
216
230
B
231
286
Tightening Torque 2 kg·cm
306
271
Tightening Torque 1.5 kg·cm
267
295
243
264
A
296
A
268
270
272
299
273
275
219
269
260
236
A
205
230
231
232
216
246
232
230
231
216
281
291
283
303
266
(Bottom Side) A
502
276
216
235
224
225
A
B
B
503
Label Side
Tightening Torque 2 kg·cm
B
257 x2
Tightening Torque 2 kg·cm
C
Tightening Torque 2 kg·cm
274
227
203
247
228
229
233
298
Tightening Torque 2.5 kg·cm
226
D
213
C
215
214
507
B
216
256
247
509
240
217
293
247
216
A
D
253
201
304
202
305
289
Tightening Torque 2.5 kg·cm
301
212
237
Tightening Torque 2 kg·cm
Tightening Torque 2 kg·cm
206
210
209
208
206
292
285
223
262
255
287
Tightening Torque 1 kg·cm
Tightening Torque 2.5 kg·cm
▨ ····· Point of GREASE applied
Ⓐ MOLYKOTE E PASTE
Ⓑ GREASE EM-60L
Ⓒ GREASE PG-671

CD Mechanism Assembly Parts List

●For DP24A220 Model

Symbol No.	Index	Part No.	Description		
202	4-H	15C13518W01	Guide, Top (DP−2)		
203	5-C	03S44205G14	Screw, Pan (M2 × 5)		
204	5-B	30T73687F18	Parallel Wire (2P)		
205	4-C	41B12249W02	Spring, Pull		
206		04B41345P06	Washer, Lock (M2.1)		
207	1-E	41A20219W01	Spring, ROL (L)		
208	5-F	45A90817F01	Arm, Solenoid (1)		
209	5-F	45A90818F01	Arm, Solenoid (2)		
210	5-F	41A92364F01	Spring, Solenoid		
211	2-F	07B10907W01	Stopper, Disc		
212	4-F	47A61544F02	Plunger, RF Solenoid		
213	3-G	75A20934W01	Cushion, Magnet (B)		
214	3-F	84A92276F01	END Switch (A) P.C. Board		
215		03D40014G66	Screw, W/Washer (M2 × 3.5)		
216		03D40014G07	Screw, W/Washer (M2 × 4)		
217	4-F	44B90838F01	Gear, Cam		
218	4-C	46A91007F02	Stud, Gear		
219	4-E	41B12249W07	Spring, Pull		
221	2-F	49B90822F01	Roller (G)		
223		43A90873F01	Bush, Roller		
225	4-C	41A90877F01	Spring, Cam		
226		03D40014G62	Screw, W/Washer (M2 × 3)		
227	5-C	44A90836F01	Gear (D)		
228	5-C	44A90837F01	Gear (E)		
229	5-C	04B41345P01	Washer, Lock (M1.2)		
230		75B11922W02	Damper, DP−3		
231		15A12929W01	Holder, Damper−3		
232		04C42091G06	Ring "E" (M1.5)		
233	5-C	04C42091G11	Ring "E" (M2.5)		
234	3-C	27C30861W01	Base, Pick-up		
236	4-C	41A11905W01	Spring, Trigger		
237	4-F	04C42091G05	Ring "E" (M2)		
238	3-D	03S94385F26	Screw Countersink (M1.7×2.6)		
239	4-A	03A90175F05	Screw, Bind (M2 × 3.7)		
240		03S94385F09	Screw, Pan (M2 × 3)		
241	4-A	03S94385F20	Screw, Pan (M2 × 8.5)		
242	3-B	03D40121T38	Screw, W/Double Washer (M2 × 5)		
243	3-E	43A30923W01	Table, Spindle		
244	3-B	07B10923W01	Bracket, Screw		
245		47A30925W01	Shaft, Pick-up		
246	4-D	43A11901W01	Bush, Triger (A)		
247		04B41345P15	Washer, Lock (M1.2)		
248	3-D	01B12125W01	Assy., Riv. Pick Chassis		
249	3-B	47A10927W02	Shaft, Screw		
250	3-B	44A90998F01	Gear, Screw		
252	4-B	44A90996F01	Gear, Motor		
253	4-G	41B12249W08	Spring, Pull		
254	4-C	44A90997F01	Gear, Middle		
255		04B41345P02	Washer, Lock (M1.7)		
256	4-F	03S94385F23	Screw, Pan (M2 × 5)		
257	5-D	03S94385F07	Screw, Pan (M2 × 2)		
258	3-C	07C10922W01	Bracket, Motor		
259	4-B	41A10928W03	Spring, Shaft		
261		03D40014G02	Screw, W/Washer (M2 × 6)		
262	3-E	41A10928W04	Spring, Comp		
263	3-B	41C10925W02	Spring, Nut		
264	3-E	14A96087F01	Sheet, Table		
265	4-B	84T15149W01	FPC Actuate P.C.Board		
266	4-E	01A31429W01	Assy., Clamper Rivet		
267	3-E	01B12123W01	Assy., Riv. Arm Clamp		
269	4-E	41A11903W01	Spring, Lever		
270	3-F	04B41345P04	Washer, Lock (M2.6)		
271	3-E	07A30152W01	Bracket, Disc Stopper		
272	3-F	41B12249W01	Spring, Pull		
273	4-F	07A11468W01	Plate, Top		
274	5-C	44A90830F01	Rack, Cam		
275	4-F	03S44205G94	Screw, Pan (M1.7 × 2)		
277	3-E	43B30924W01	Spindle, Hub		
279	1-C	41B12249W03	Spring, Pull		
280	2-E	41B12249W04	Spring, Pull		

NOTE : The parts without part numbers are not supplied.

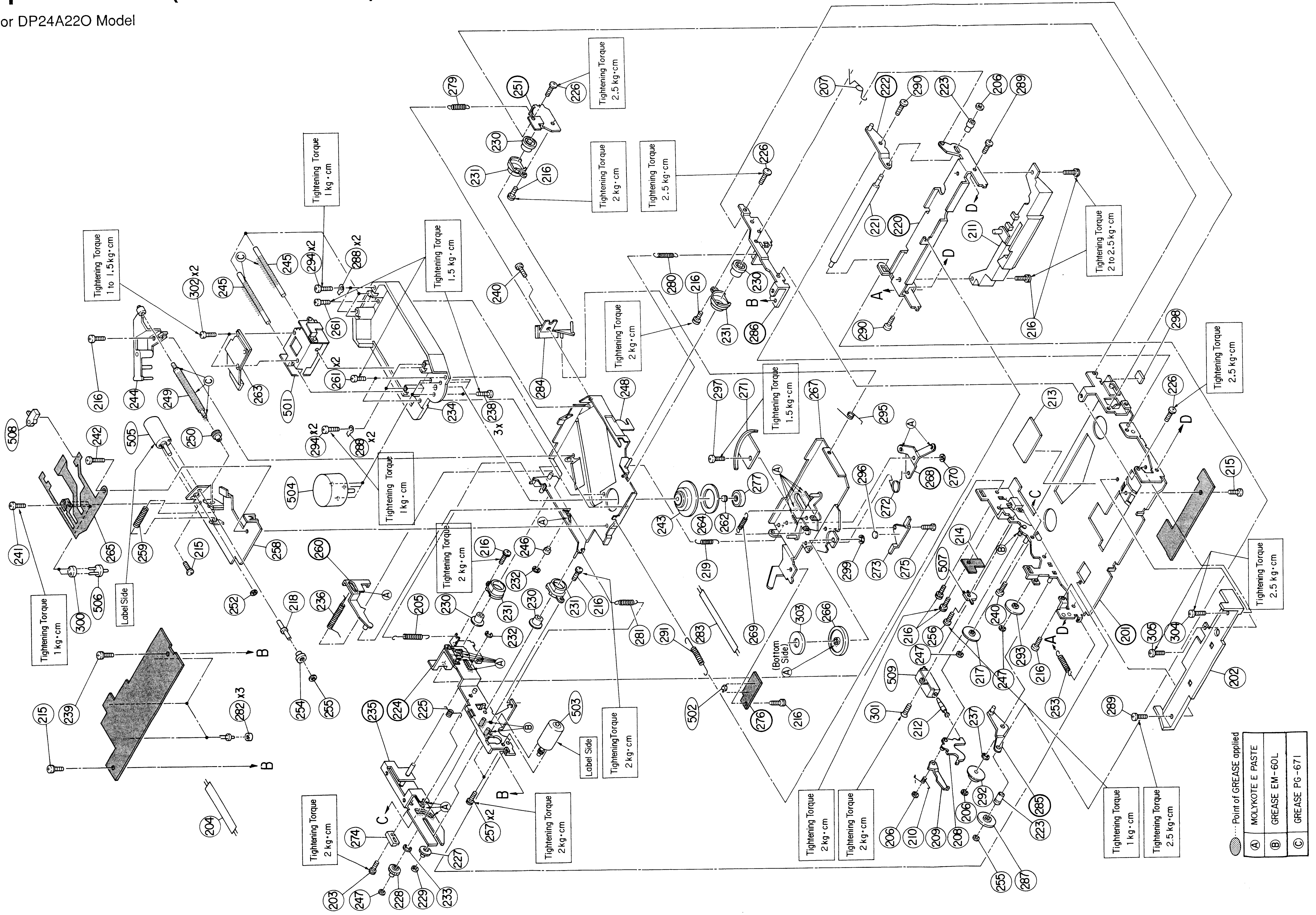
Symbol No.	Index	Part No.	Description		
281	4-D	41B12249W05	Spring, Pull		
282	4-B	43A20208W01	Spacer, LED		
283	4-E	30T73687F19	Parallel Wire (2P)		
284	3-D	01A92321F02	Assy., Bracket Rivet (CLP−LP)		
287	5-G	01T15181W01	Assy., Clutch DP		
288		07A30961W01	Stopper, Shaft (B)		
289		03A90175F01	Screw, Bind (M2 × 4)		
290		03A90175F02	Screw, Bind (M2 × 3)		
291	4-E	41B90875F07	Spring, Pull		
292	5-F	44A90834F01	Gear (B)		
293	4-F	44A90835F01	Gear (C)		
294		03S70494F14	Screw, Pan (M1.7 × 4)		
295	3-F	04S40075G06	Washer, Plyslider (M2.1)		
296	3-F	43A41006F01	Spacer, Polyslider		
297	3-E	03S94385F24	Screw, Pan (M2 × 3)		
298	2-G	75A20928W01	Rubber, Top Chassis		
299	4-F	04B41345P24	Washer, Lock (M2.1)		
300	4-A	43A20208W02	Spacer, LED (A)		
301	4-F	03S94385F14	Screw, Countersink (M2.6 × 3)		
302	2-B	03S94385F25	Screw, Pan (M2 × 4)		
303	4-E	75A20128W01	Sheet, Holder		
304	4-G	03S44205G96	Screw, Bind (M2 × 5)		
305	4-G	03S44205G95	Screw, Bind (M2 × 4)		
Miscellaneous					
501	3-C	88T15309W01	Pick-up, Unit		
502	4-E	48T16057W02	LED, AN501 (RED)		
503	4-D	01V13100W97	Assy., Motor Load		
504	3-C	59T91005F02	Motor, Spindle		
505	3-B	59T52973F03	Motor, Servo		
506	4-B	48T92913F01	Transistor, Photo PT360		
507	4-F	40T71025F03	Switch, Detector (CAM END)		
508	3-A	40T71025F01	Switch, Detector (LIMIT)		
509	4-F	01A90816F01	Assy., Solenoid DP Frame		

Symbol No.	Index	Part No.	Description		

NOTE : The parts without part numbers are not supplied.

Exploded View (CD Mechanism)

- For DP24A22O Model



Tightening Torque 2.5 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 2.5 kg·cm
Tightening Torque 1 kg·cm
Tightening Torque 1.5 kg·cm
Tightening Torque 1 to 1.5kg·cm
Tightening Torque 2 to 2.5 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 1.5 kg·cm
Tightening Torque 2.5 kg·cm
Tightening Torque 1 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 1 kg·cm
Tightening Torque 2.5 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 1 kg·cm
Tightening Torque 2.5 kg·cm
Label Side
Label Side
(Bottom Side)
A
B
C
D
279
251
226
230
231
216
207
222
290
223
206
289
221
220
211
240
280
286
284
248
245
294 x2
288 x2
302 x2
261
261 x2
263
501
234
238
3x
244
249
250
505
508
242
265
241
300
506
259
215
258
504
297
271
267
295
268
270
296
272
273
275
277
262
264
243
219
269
299
213
298
201
214
507
232
246
281
291
283
303
266
256
247
293
217
253
305
304
202
252
218
236
205
260
254
255
239
282 x3
204
235
224
225
503
502
276
509
301
212
237
292
285
208
209
210
287
203
228
229
233
227
257 x2
274

⬭ .... Point of GREASE applied

Ⓐ	MOLYKOTE E PASTE
Ⓑ	GREASE EM-60L
Ⓒ	GREASE PG-671

1

2

3

4

5

A B C D E F G H

CD Mechanism Assembly Parts List

- ● For DP22A07O/DP22A08O/DP22A31O/DP22A32O Models

Symbol No.	Index	Part No.	Description		
202	4-H	15C13518W01	Guide, Top (DP−2)		
203	5-C	03S44205G14	Screw, Pan (M2×5)		
204	5-B	30T73687F18	Parallel, Wire (2P)		
205		03A90175F01	Screw, Bind (M2×4)		
206		04B41345P06	Washer, Lock (M2.1)		
207	1-E	41A20219W01	Spring, ROL		
208	5-F	45A90817F01	Arm, Solenoid. (1)		
209	5-F	45A90818F01	Arm, Solenoid. (2)		
210	5-F	41A92364F01	Spring, Solenoid.		
□ 211	2-F	07B10907W02	Stopper, Disc		
☆ 211	2-F	07B10907W02	Stopper, Disc		
◇ 211	2-F	07B10907W02	Stopper, Disc		
212	4-F	47A61544F02	Plunger, F/R		
213	4-F	03S94385F14	Screw, Countersink (M2.6×3)		
214	4-F	84A92276F01	END Switch (A) P.C. Board		
215		03D40014G66	Screw, W/Washer (M2×3.5)		
216		03D40014G07	Screw, W/Washer (M2×4)		
217	4-F	44B90838F01	Gear, Cam		
218	4-B	46A91007F01	Stud, Gear		
219	4-E	41B12249W07	Spring, Pull		
221	2-F	49B90822F01	Roller (G)		
223		43A90873F01	Bush, Roller		
225	4-C	41A90877F01	Spring, Cam		
226		03D40014G62	Screw, W/Washer (M2×3)		
227	5-C	44A90836F01	Gear (D)		
228	5-C	44A90837F01	Gear (E)		
229	5-C	04B41345P01	Washer Lock (M1.2)		
230		75B11922W02	Damper, DP-3		
231		15A12929W01	Holder, Damper DP-3		
232		04C42091G06	Ring "E" (M1.5)		
233		04C42091G11	Ring "E" (M2.5)		
234	3-D	03S94385F01	Screw, Pan (M1.7×2.3)		
236	4-B	41A11905W01	Spring, Trigger		
237	3-F	04B41345P04	Washer, Lock (M2.6)		
239		04B41345P24	Washer, Lock (M2.1)		
240		03S94385F09	Screw, Pan (M2×3)		
241		04B41345P15	Washer, Lock (M1.2)		
242	3-F	30T73687F14	Parallel, Wire (3P)		
243	3-E	43A22104W01	Table, Spindle		
244	3-A	07A90992F01	Bracket, Screw		
245	3-D	47A91004F01	Shaft, Pick-up		
246	4-D	43A11901W01	Bush, Trigger (A)		
247		03S94385F10	Screw, Pan (M2×4)		
248	3-E	07A92196F01	Bracket, Flex Wire		
249	3-C	03A91001F01	Shaft, Screw		
250	3-C	44A90998F01	Gear, Screw		
252	4-B	44A90996F01	Gear, Motor		
253	4-G	41B12249W08	Spring, Pull		
254	4-B	44A90997F01	Gear, Middle		
255	4-B	04B41345P13	Washer, Lock (M1.7)		
256	4-F	03S94385F23	Screw, Pan (M2×5)		
△ 257	1-A	03S44205G42	Screw, Pan (M2.6×4)		
□ 257	1-A	03S44205G42	Screw, Pan (M2.6×4)		
◇ 257	1-A	03S44205G42	Screw, Pan (M2.6×4)		
258	3-B	01V91700F07	Assy., Motor Unit		
259	3-A	41A90999F01	Spring, Screw		
261	1-C	41B21241W02	Spring, Pull		
262	2-C	30T92773F01	Cable, Flex (16P)		
263	2-B	26A94948F01	Shield		
△ 263	2-B	26A94948F01	Shield		
□ 263	2-B	26A94948F01	Shield		
◇ 263	2-B	26A94948F01	Shield		

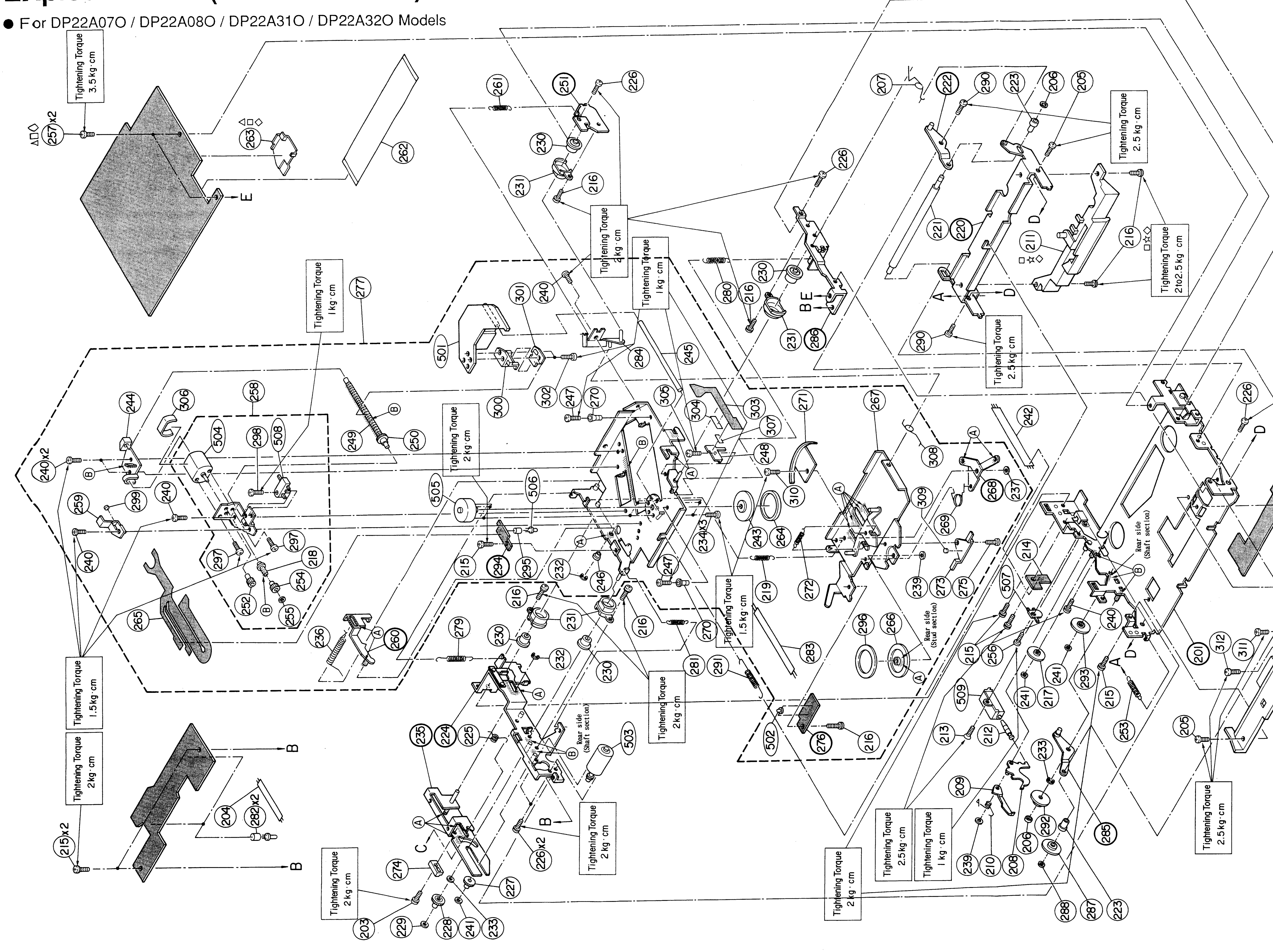
Notes : The parts without part numbers are not supplied.
△ : For DP22A07O model only, □ : For DP22A08O model only, ☆ : For DP22A31O model only,
◇ : For DP22A32O model only, Others : Common

Symbol No.	Index	Part No.	Description		
264	3-E	14A96087F01	Sheet, Table		
265	4-B	84T15747W01	FPC Actuator P. C. Board		
266	4-E	01A12222W01	Assy., Clamper Rivet		
267	3-E	01B12123W01	Assy., Riv. Arm Clamp		
269	3-F	41B12249W01	Spring, Slider		
270		43A90995F01	Stopper, Shaft		
271	3-E	07A30152W01	Bracket, Disc Stopper		
272	4-E	41A11903W01	Spring, Lever		
273	4-F	07A11468W01	Plate, Top		
274	5-C	44A90830F01	Rack, Cam		
275	4-F	03S44205G94	Screw, CounterSink (M2.6 × 8)		
△ 277	2-C	01V23100W27	Assy., Pick-up Unit-S2		
□ 277	2-C	01V24900W02	Assy., Pick-up Unit-S2		
☆ 277	2-C	01V24900W02	Assy., Pick-up Unit-S2		
◇ 277	2-C	01V24900W02	Assy., Pick-up Unit-S2		
279	4-C	41B21241W01	Spring, Pull		
280	2-E	41B21241W03	Spring, Pull		
281	4-D	41B21241W04	Spring, Pull		
282	5-B	43A20208W01	Spacer, LED		
283	4-E	30T73687F20	Parallel, Wire (2P)		
284	3-D	01A92321F02	Assy., Bracket, Rivet (CLP-LP)		
287	5-F	01T15181W01	Assy., DP Clutch		
288	5-F	04B41345P02	Washer, Lock (M1.7)		
290		03A90175F02	Screw, Bind (M2×3)		
291	4-E	41B90875F07	Spring, Pull		
292	5-F	44A90834F01	Gear (B)		
293	4-F	44A90835F01	Gear (C)		
295	4-D	43A20208W03	Spacer, LED (A)		
296	4-E	75A20128W01	Sheet, Holder		
297		03S94385F10	Screw, Pan (M2×4)		
298	3-B	03S94385F12	Screw, Pan (M2.6×6)		
299	3-A	43A41006F05	Spacer, Polyslider		
300	3-C	07A90993F01	Bracket, Pick-up		
301	2-D	01A90994F01	Spring, Nut		
302	3-D	03S94385F03	Screw, Pan (M1.7×1.8)		
303	3-E	84T90887F01	FPC PHOTO P. C. Board		
304	3-D	14S71058F40	Insulator, Cover		
305	3-D	03S94385F06	Screw, Pan (M2×1.8)		
306	3-B	41A94452F01	Spring, Motor		
307	3-E	14A28008W01	Spacer		
308	3-F	41A96086F01	Spring, Arm Clamp		
309	3-F	43A41006F01	Spacer, Polyslider		
310	3-E	03S94385F24	Screw, Pan (M2 × 3)		
311	4-G	03S44205G96	Screw, Bind (M2 × 5)		
312	4-G	03S44205G95	Screw, Bind (M2 × 4)		
Miscellaneous					
501	3-C	88T90878F01	Pick-up, Unit		
502	4-E	48T16057W02	LED, AN501-B1 (RED)		
503	4-D	01V21900W45	Assy., Motor Load		
504	3-B	59T90879F01	Motor, Servo		
505	3-C	59T91005F01	Motor, Spindle		
506	3-D	48T92913F01	Transistor, Photo PT360		
507	4-F	40T71025F03	Switch, Detector		
508	3-B	40T71025F01	Switch, Detector		
509	4-F	01A90816F01	Assy., Solenoid DP Frame		

Notes : The parts without part numbers are not supplied.
△ : For DP22A07O model only, □ : For DP22A08O model only, ☆ : For DP22A31O model only,
◇ : For DP22A32O model only, Others : Common

Exploded View (CD Mechanism)

● For DP22A07O / DP22A08O / DP22A31O / DP22A32O Models


Tightening Torque 3.5 kg·cm
△□◇ 257 x2
263 △□◇
262
E
261
251
226
230
231
216
Tightening Torque 2 kg·cm
Tightening Torque 1 kg·cm
Tightening Torque 1 kg·cm
277
240
301
501
300
302
247
270
284
245
305
304
303
307
248
280
216
230
231
286
B E
207
222
290
223
206
205
Tightening Torque 2.5 kg·cm
221
220
211 □☆◇
D
216 □☆◇
Tightening Torque 2to2.5 kg·cm
A
D
290
Tightening Torque 2.5 kg·cm
Tightening Torque 2 kg·cm
226
D
244
306
258
504
298
508
249
250
240x2
259
299
240
240
297
297
218
254
252
255
265
Tightening Torque 2 kg·cm
505
506
215
294
295
232
246
247
234x3
243
264
310
271
267
308
242
268
237
309
269
239
273
275
272
219
Tightening Torque 1.5 kg·cm
283
296
266
Rear side (Stud section)
214
Rear side (Shaft section)
507
240
201
312
311
215
Tightening Torque 2.5 kg·cm
202
236
260
279
216
231
216
270
230
232
230
281
291
Tightening Torque 2 kg·cm
502
276
216
256
215
241
217
241
293
215
253
509
213
212
233
209
292
206
208
210
239
285
287
223
288
205
Tightening Torque 2.5 kg·cm
Tightening Torque 2.5 kg·cm
Tightening Torque 1 kg·cm
Tightening Torque 2 kg·cm
Tightening Torque 1.5 kg·cm
Tightening Torque 2 kg·cm
215 x2
204
282 x2
B
B
235
224
225
Rear side (Shaft section)
503
226x2
Tightening Torque 2 kg·cm
C
274
227
203
229
228
241
233
Tightening Torque 2 kg·cm
Ⓐ
Ⓑ

Notes :
△ : For DP22A07O model only
□ : For DP22A08O model only
☆ : For DP22A31O model only
◇ : For DP22A32O model only
Others : Common

▨ ····Point of GREASE applied

Ⓐ	MOLYKOTE E PASTE
Ⓑ	GREASE EM-60L

Disassembly Instructions

● For DP22A070/DP22A080/DP22A310/DP22A320 models

1. Removal of Main P. C. Board

(1) Unsolder the solder (a) as shown in Figure 24.

(2) Remove two screws marked "○" as shown in Figure 24.

(3) Disconnect all connectors from the Main P. C. Board while lifting up the Main P. C. Board A section.

Note : When unsoldering the solder (a), take care not to break the parallel wire.

2. Removal of Interface P. C. Board

(1) After removing the Main P. C. Board, unsolder the solder (b) as shown in Figure 25.

(2) Remove two screws marked "×" as shown in Figure 25.

(3) Remove two jumper wires connected to the loading motor.

Note : When unsoldering the solder (b), take care not to break the parallel wire.

3. Removal of Sensor P. C. Board

(1) Unsolder the solder (c) as shown in Figure 26.

(2) Remove one screw marked "△" as shown in Figure 26.

Note : When unsoldering the solder (c), take care not to break the parallel wire.

4. Removal of End Switch P. C. Board

(1) Unsolder the solder (d) and (e) as shown in Figure 27.

(2) Remove two screws marked "□" as shown in Figure 27.

Note : When unsoldering the solder (d), take care not to break the parallel wire.

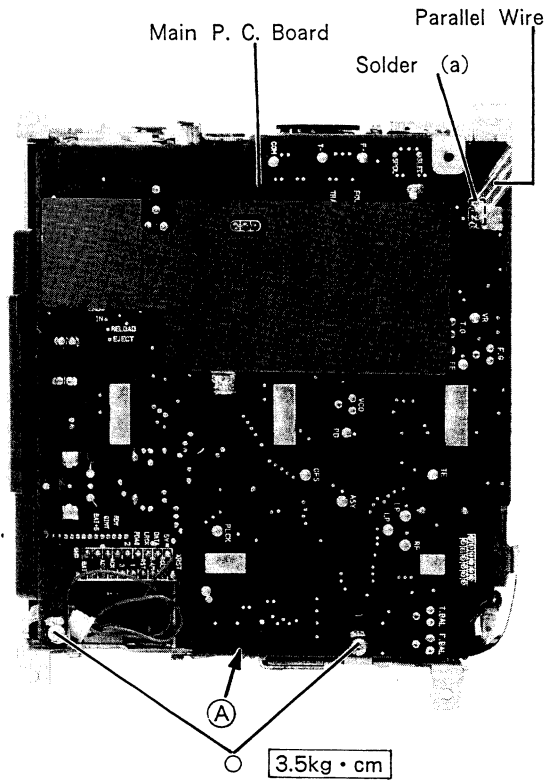

Main P. C. Board
Parallel Wire
Solder (a)
Ⓐ
○ 3.5kg・cm
Tightening Torque

Figure 24

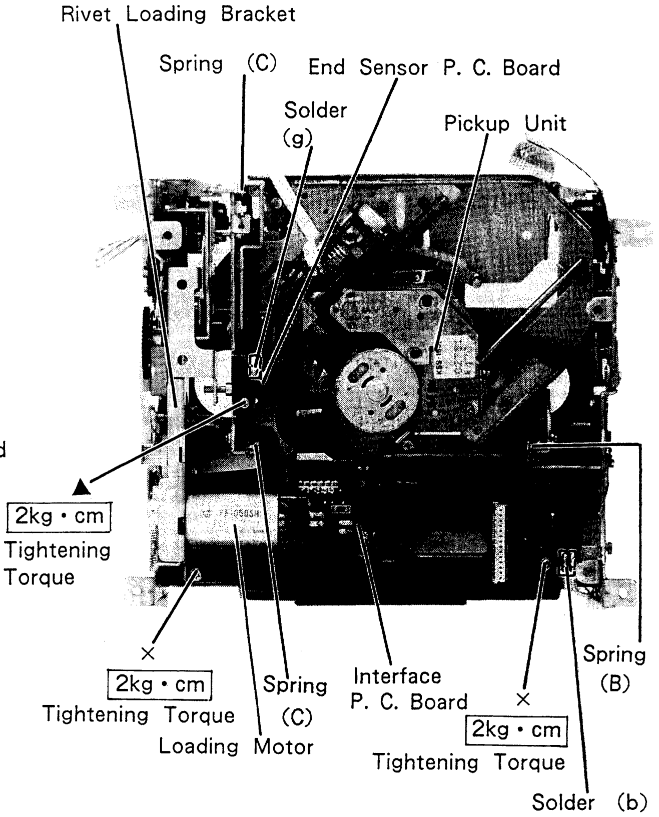

Rivet Loading Bracket
Spring (C)
End Sensor P. C. Board
Solder (g)
Pickup Unit
▲ 2kg・cm
Tightening Torque
× 2kg・cm
Tightening Torque
Spring (C)
Loading Motor
Interface P. C. Board
× 2kg・cm
Tightening Torque
Spring (B)
Solder (b)

Figure 25

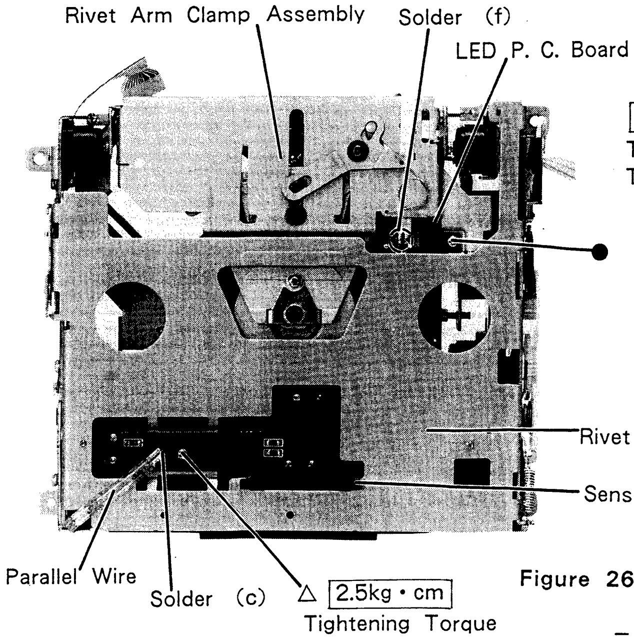

Rivet Arm Clamp Assembly
Solder (f)
LED P. C. Board
●
Rivet Chassis Assembly
Sensor P. C. Board
Parallel Wire
Solder (c)
△ 2.5kg・cm
Tightening Torque

Figure 26

5. Removal of LED P. C. Board

(1) Unsolder the solder (f) as shown in Figure 26.

(2) Remove one screw marked "●" as shown in Figure 26.

Note : When unsoldering the solder (f), take care not to break the parallel wire.

6. Removal of End Sensor P. C. Board

(1) After removing the Main P. C. Board, unsolder the solder (g) as shown in Figure 25.

(2) Remove one screw marked "▲" as shown in Figure 25.

Note : When unsoldering the solder (g), take care not to break the parallel wire.

7. Removal of Damper (L) Bracket

(1) After removing the Main and Interface P. C.Boards, remove one spring (A) as shown in Figure 28.

(2) Remove one screw marked "■" as shown in Figure 28.

(3) Remove the damper from the Pickup Unit shaft, and the bracket can be removed.

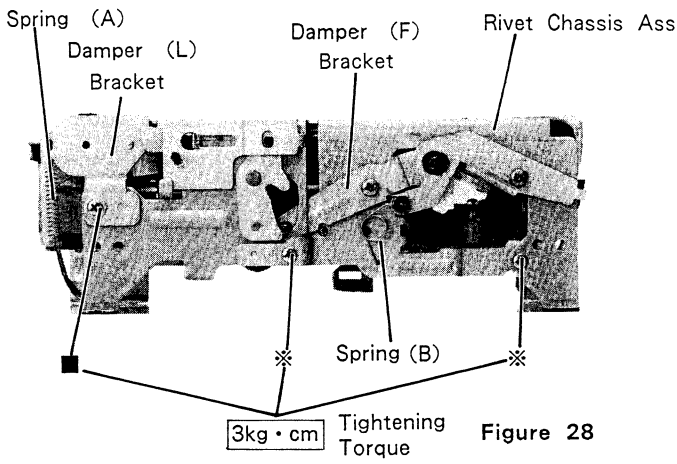

Spring (A)
Damper (L)
Bracket
Damper (F)
Bracket
Rivet Chassis Assembly
■
※
Spring (B)
※
3kg・cm
Tightening Torque

Figure 28

8. Removal of Damper (F) Bracket

(1) After removing the Main and Interface P. C. Boards, remove two springs (B) as shown in Figures 25 and 28.

(2) Remove two screws marked "※" as shown in Figure 28.

(3) Remove the damper from the Pickup Unit shaft, and the bracket can be removed.

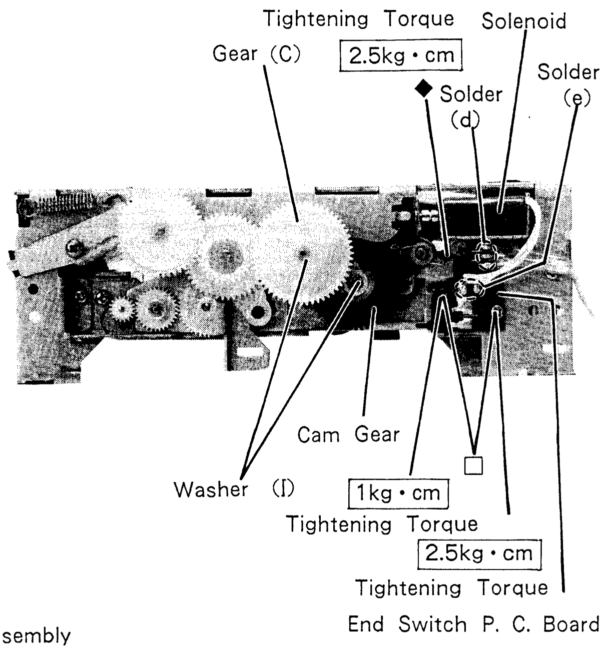

Tightening Torque
Solenoid
Gear (C)
2.5kg・cm
◆ Solder (d)
Solder (e)
Cam Gear
Washer (I)
1kg・cm
Tightening Torque
□
2.5kg・cm
Tightening Torque
End Switch P. C. Board

Figure 27

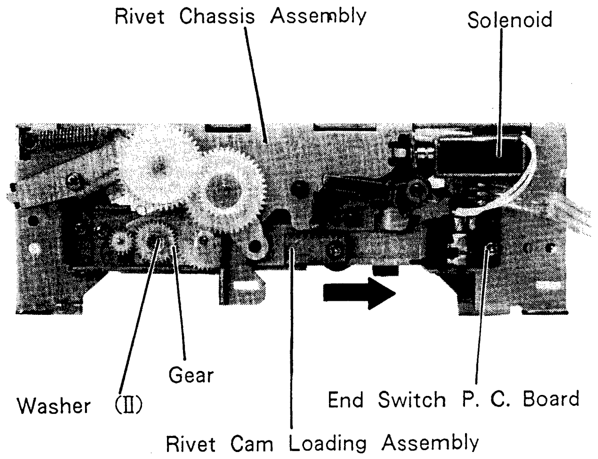

Rivet Chassis Assembly
Solenoid
Washer (II)
Gear
End Switch P. C. Board
Rivet Cam Loading Assembly

Figure 29

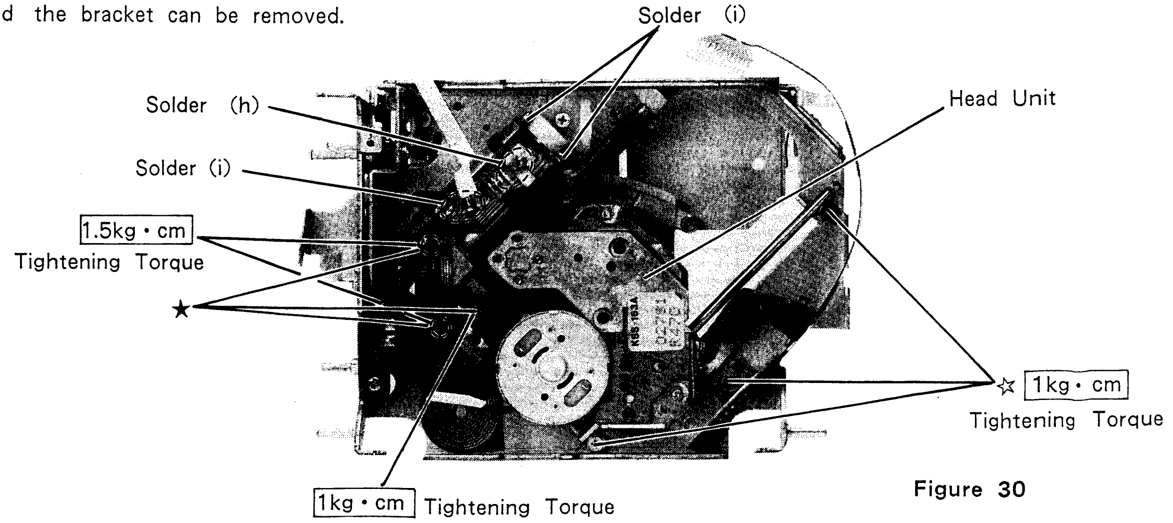

Solder (i)
Solder (h)
Solder (i)
Head Unit
1.5kg・cm
Tightening Torque
★
☆ 1kg・cm
Tightening Torque
1kg・cm Tightening Torque

Figure 30

Disassembly Instructions

● For DP22A070/DP22A080/ DP22A310/DP22A320 models

1. Removal of Main P. C. Board

(1) Unsolder the solder (a) as shown in Figure 24.

(2) Remove two screws marked "○" as shown in Figure 24.

(3) Disconnect all connectors from the Main P. C. Board while lifting up the Main P. C. Board A section.

Note : When unsoldering the solder (a), take care not to break the parallel wire.

2. Removal of Interface P. C. Board

(1) After removing the Main P. C. Board, unsolder the solder (b) as shown in Figure 25.

(2) Remove two screws marked "×" as shown in Figure 25.

(3) Remove two jumper wires connected to the loading motor.

Note : When unsoldering the solder (b), take care not to break the parallel wire.

3. Removal of Sensor P. C. Board

(1) Unsolder the solder (c) as shown in Figure 26.

(2) Remove one screw marked "△" as shown in Figure 26.

Note : When unsoldering the solder (c), take care not to break the parallel wire.

4. Removal of End Switch P. C. Board

(1) Unsolder the solder (d) and (e) as shown in Figure 27.

(2) Remove two screws marked "□" as shown in Figure 27.

Note : When unsoldering the solder (d), take care not to break the parallel wire.

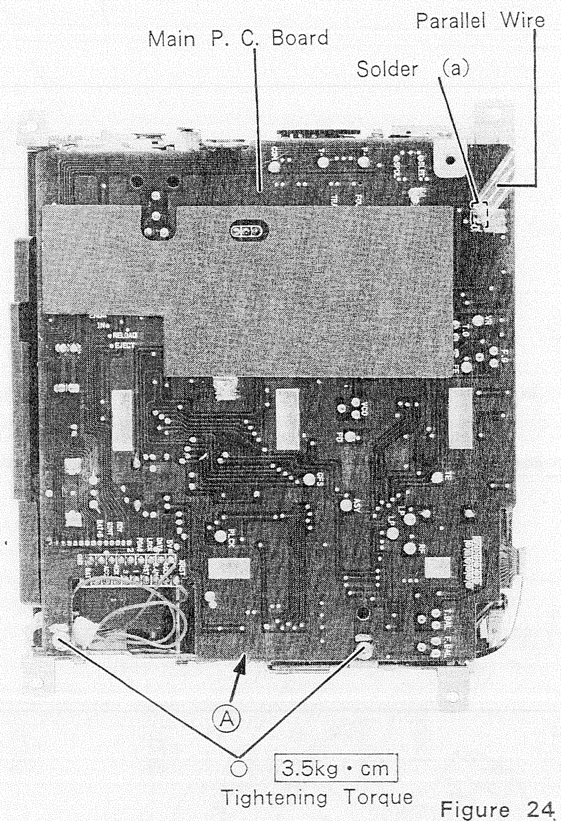

Main P. C. Board
Parallel Wire
Solder (a)
Ⓐ
○ 3.5kg・cm
Tightening Torque

Figure 24

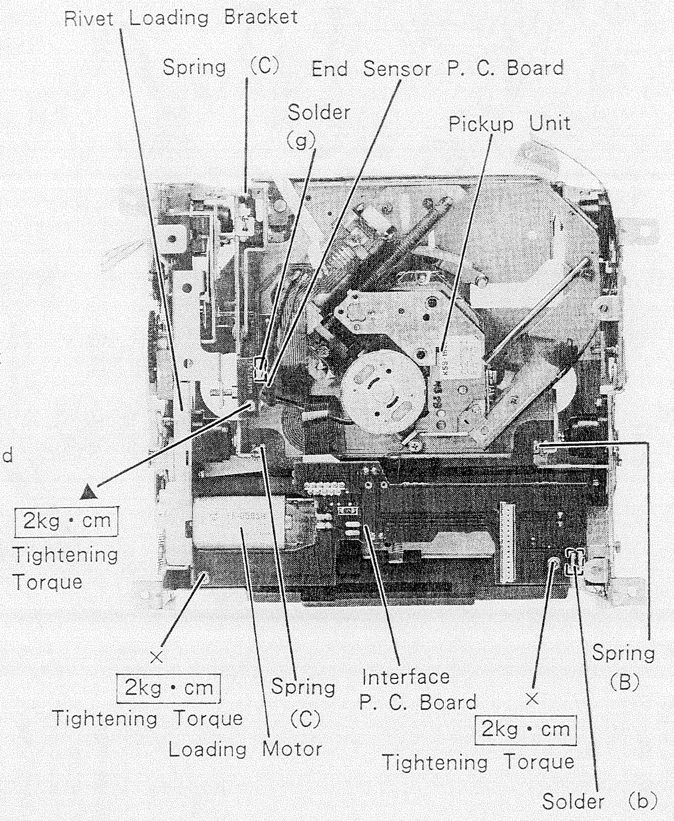

Rivet Loading Bracket
Spring (C)
End Sensor P. C. Board
Solder (g)
Pickup Unit
▲
2kg・cm
Tightening Torque
×
2kg・cm
Tightening Torque
Spring (C)
Loading Motor
Interface P. C. Board
×
2kg・cm
Tightening Torque
Spring (B)
Solder (b)

Figure 25

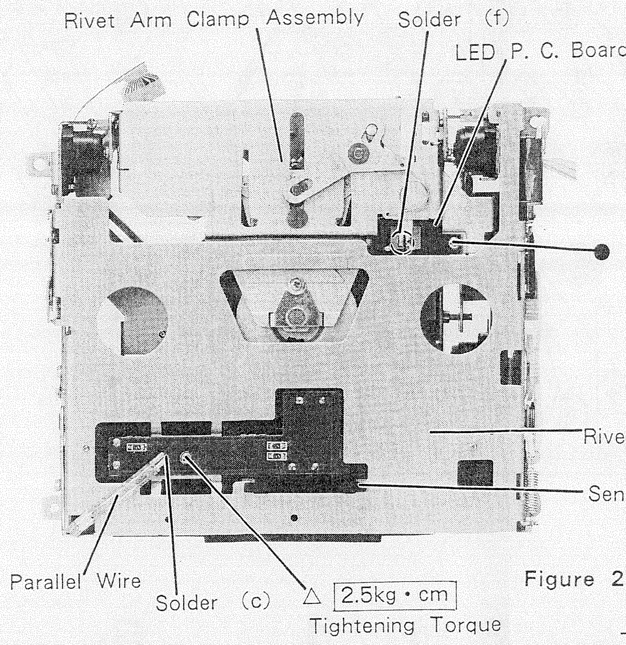

Rivet Arm Clamp Assembly
Solder (f)
LED P. C. Board
●
Rivet Chassis Assembly
Sensor P. C. Board
Parallel Wire
Solder (c)
△ 2.5kg・cm
Tightening Torque

Figure 26

5. Removal of LED P. C. Board

(1) Unsolder the solder (f) as shown in Figure 26.

(2) Remove one screw marked "●" as shown in Figure 26.

Note : When unsoldering the solder (f), take care not to break the parallel wire.

6. Removal of End Sensor P. C. Board

(1) After removing the Main P. C. Board, unsolder the solder (g) as shown in Figure 25.

(2) Remove one screw marked "▲" as shown in Figure 25.

Note : When unsoldering the solder (g), take care not to break the parallel wire.

7. Removal of Damper (L) Bracket

(1) After removing the Main and Interface P. C.Boards, remove one spring (A) as shown in Figure 28.

(2) Remove one screw marked "■" as shown in Figure 28.

(3) Remove the damper from the Pickup Unit shaft, and the bracket can be removed.

8. Removal of Damper (F) Bracket

(1) After removing the Main and Interface P. C. Boards, remove two springs (B) as shown in Figures 25 and 28.

(2) Remove two screws marked "※" as shown in Figure 28.

(3) Remove the damper from the Pickup Unit shaft, and the bracket can be removed.

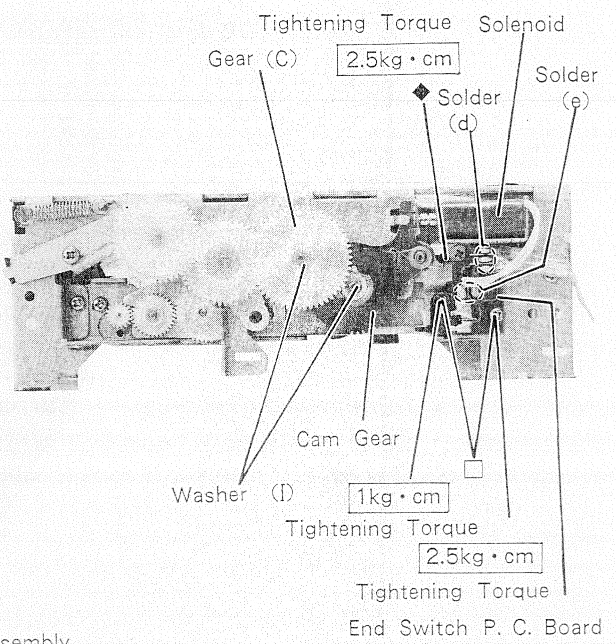

Tightening Torque
Solenoid
Gear (C)
2.5kg・cm
Solder (e)
◆ Solder (d)
Cam Gear
□
Washer (Ⅰ)
1kg・cm
Tightening Torque
2.5kg・cm
Tightening Torque
End Switch P. C. Board

Figure 27

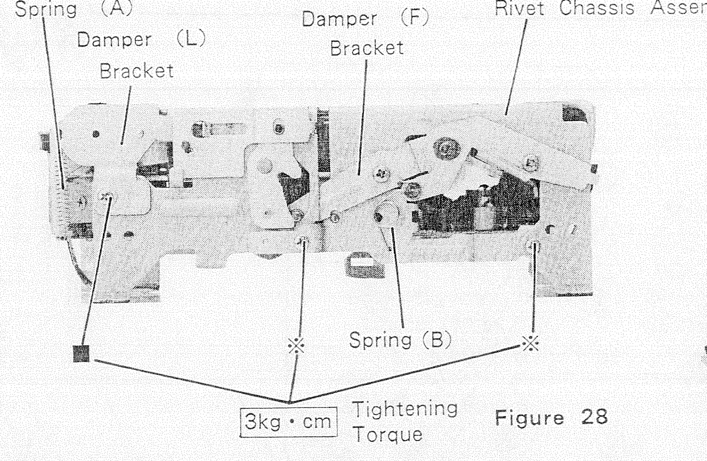

Spring (A)
Damper (L) Bracket
Damper (F) Bracket
Rivet Chassis Assembly
Spring (B)
■
※
※
3kg・cm Tightening Torque

Figure 28

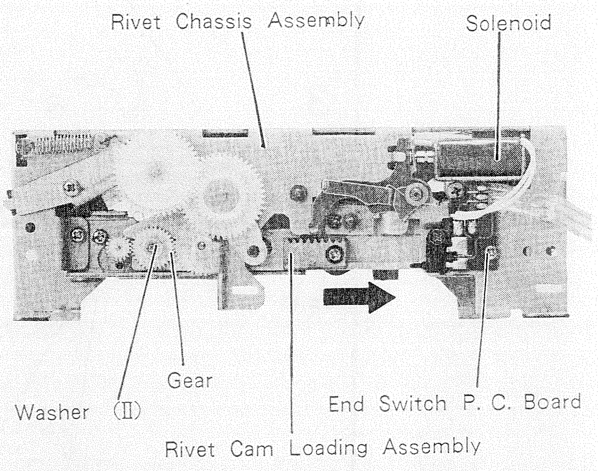

Rivet Chassis Assembly
Solenoid
Washer (Ⅱ)
Gear
End Switch P. C. Board
Rivet Cam Loading Assembly

Figure 29

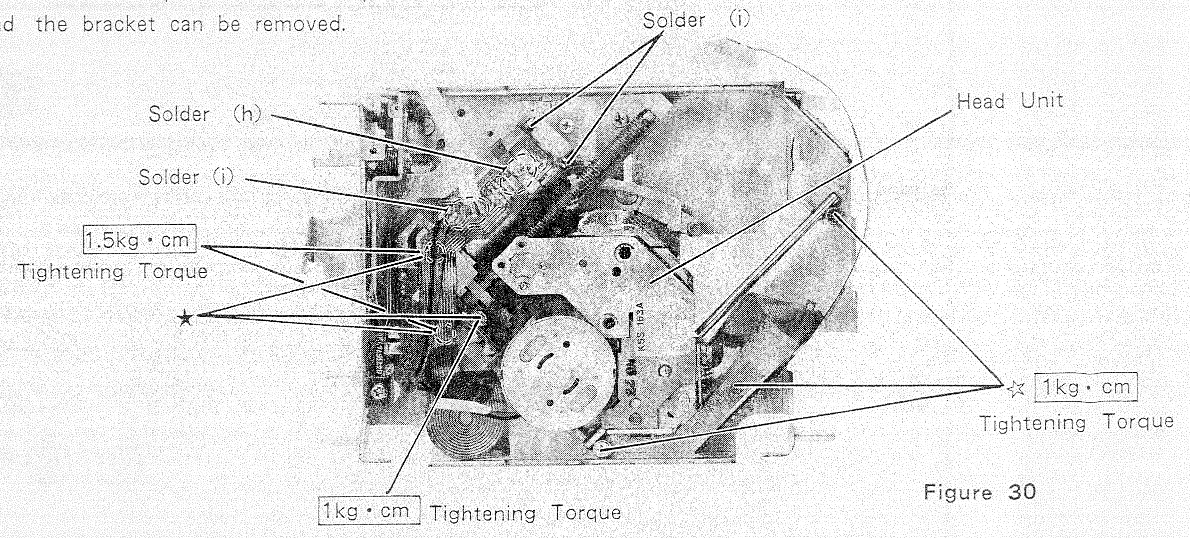

Solder (i)
Head Unit
Solder (h)
Solder (i)
1.5kg・cm
Tightening Torque
★
☆ 1kg・cm
Tightening Torque
1kg・cm Tightening Torque

Figure 30

9. Removal of Pickup Unit

(1) After removing the both bracket for the damper (L) and (F), remove the washer (I), cam gear and gear (C) as shown in Figure 27.

(2) Remove three screws marked "＊", and the Pickup Unit with Rivet Loading bracket Assembly can be removed as shown in Figure 31.

(3) Remove two springs (C), remove the damper from the Pickup Unit shaft, and then the Rivet Loading Bracket Assembly can be removed as shown in Figure 25.

10. Removal of Head Unit

(1) Unsolder solder (h) as shown in Figure 30.

(2) Remove three screws marked "☆" as shown in Figure 30.

11. Removal of Servo Motor P. C. Board

(1) After removing the Head Unit, unsolder three solder (i) as shown in Figure 30.

(2) Remove three screws marked "★" as shown in Figure 30.

12. Removal of Loading Motor

(1) After removing the Rivet Loading Bracket, remove one washer (II) and gear as shown in Figure 29.

(2) After moving the Rivet Cam Loading Assembly in the arrow direction, remove two screws marked "◇" as shown in Figures 29 and 31.

13. Removal of Solenoid

(1) Unsolder the solder (e) as shown in Figure 27.

(2) Remove one screw marked "◆" as shown in Figure 27.

Precautions during Disassembling and Assembling

1) Be sure to use brand-new washer and do not use any washer which was previously used. The new washer should not have peeling on cleavage.

2) When performing soldering, take care that temperature of the iron tip will not exceed 320℃ and soldering time should be less than 3 seconds. Also make sure there is no defect soldering such as loose solder, solder short and foil breakage.

3) Useful hints for remounting the can gear and gear (C).

   ① Set the Rivet Loading can Assembly to theloading position as shown in Figure 33.

   ② Engage the gear can with the gear (C) as shown in the Figure 32, and mount them on the shafts (A) of the Arm Load (R) Assembly as shown in Figure 33.

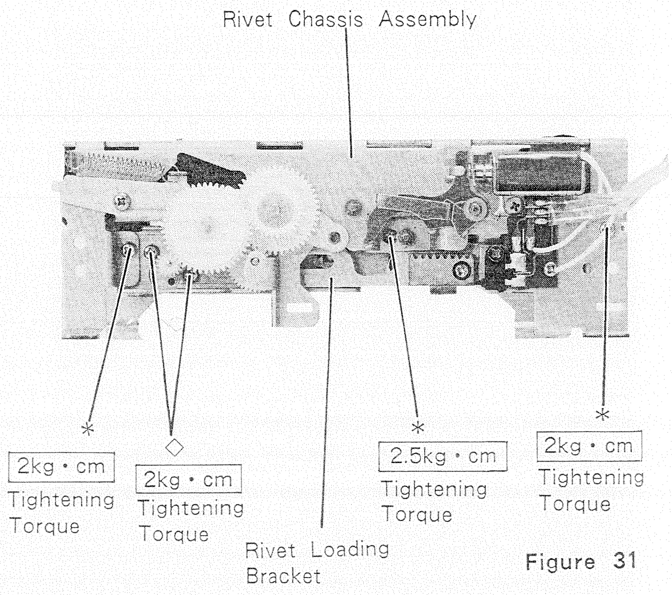

Rivet Chassis Assembly
＊
2kg・cm
Tightening Torque
◇
2kg・cm
Tightening Torque
＊
2.5kg・cm
Tightening Torque
＊
2kg・cm
Tightening Torque
Rivet Loading Bracket

Figure 31

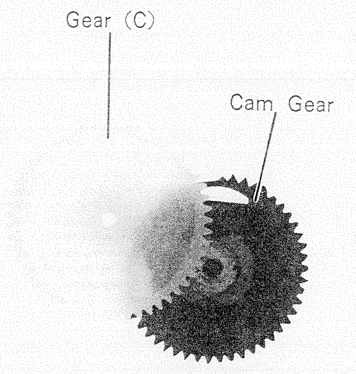

Gear (C)
Cam Gear

Figure 32

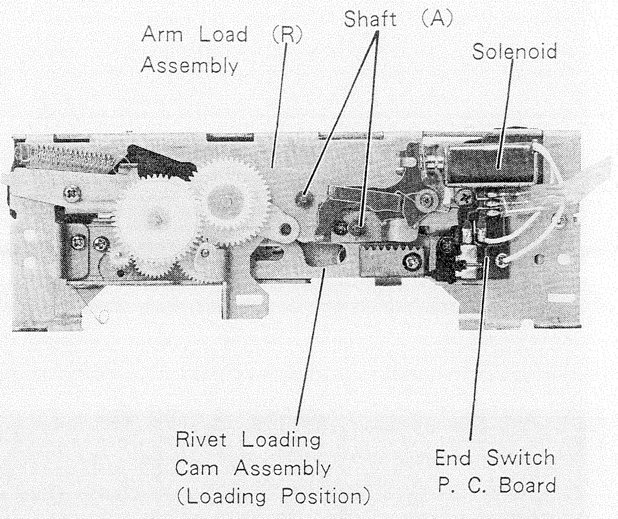

Arm Load (R) Assembly
Shaft (A)
Solenoid
Rivet Loading Cam Assembly (Loading Position)
End Switch P. C. Board

Figure 33